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U.S. DEPARTMENT OF COMMERCE / National Bureau of Standards

Thermophysical Properties of Ethane, from 90 to 600 K at Pressures to 700 Bar

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PREFACE

The Cryogenics Division of the National Bureau of Standards, with support from the American Gas Association, Inc., is engaged in a program to provide experimental data and computational methods for physical and thermodynamic properties of the constituents of liquefied natural gas mixtures (LNG). These thermophysical properties are important for all LNG technology. All operations such as liquefaction, separation, storage, pumping, transport, custodial transfer, and regasification will benefit from accurate data. As the commercial value of LNG depends on its heat of combustion, the densities of LNG mixtures and other requisite properties are especially important data for calculating the energy content of the liquid.

The compositions of LNG mixtures vary widely, depending on the source and selective vaporization during handling. To predict properties for a wide range of mixture compositions, it is essential to know accurately the properties of the pure components and of selected binary mixtures of these components.

The equation of state for the PVT properties of pure components is an essential tool for work on mixtures, because from this single formulation there can be obtained not only the density but also thermodynamic properties such as the enthalpy and specific heats at any desired temperature and pressure for which the component exists as a fluid.

A major contribution from this laboratory for computations on the thermophysical properties of LNG and its components is the development of a simple, rational equation of state which originates on the liquid-vapor coexistence boundary, and gives a qualitatively correct behavior for derived specific heats, especially about the critical point. An earlier form of this equation was used in our report, "The Thermophysical Properties of Methane from 90 to 500 K at Pressures to 700 Bar," NBS Technical Note 653, April, 1974.

In addition to the above publication, this laboratory has provided accurate experimental data on the densities, compressibilities, vapor pressures, melting pressures, specific heats, sound velocities, dielectric constants, refractive indices, and viscosities of compressed and liquefied methane at temperatures down to 90 K.

The report, "Provisional Values for the Thermodynamic Functions of Ethane" by R. D. Goodwin, NBSIR 74-398 (June 1, 1974) was prepared to discover the availability and deficiencies of experimental data needed for thermal computations, and to provide useful thermodynamic properties data at the earliest possible date. In the present report those results are modified by use of new experimental data, and by selection of a better computational path for entering compressed liquid states at subcritical temperatures.

The present report makes use of many new physical properties measurements to obtain more accurate tables of thermodynamic functions, and provides the first of such tables available for liquid ethane below its normal boiling temperature (184.5 K). In this work we have used a simplified and more highly constrained version of the equation of state than formerly used for methane because the PVT data, taken from various sources, are not as self-consistent and precise as those for methane. Auxiliary interpolation functions also are improved, e.g., to accommodate the enormous range of ethane vapor pressures and saturated vapor densities.

THERMOPHYSICAL PROPERTIES OF ETHANE, FROM 90 TO 600 K AT PRESSURES TO 700 BAR*

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The thermophysical properties of ethane are tabulated at integral temperatures over the entire range of fluid states at temperatures from 90 to 600 K along isobars to 700 bar. A new form of the equation of state is employed for the first time. Thermodynamic functions in the compressed liquid at $T < T_c$ are obtained by use of specific heats $C_v(T)$ along a high-density isochore, and $C_\sigma(T)$ for the saturated liquid. Use of these new specific heat data and also of new PVT data provide the first reliable set of thermodynamic functions for compressed liquid ethane at temperatures below its normal boiling point.

Key words: Densities; enthalpies; entropies; equation of state; ethane; internal energies; isobars; isochores; isotherms; Joule-Thomson inversion; latent heats of vaporization; melting line; orthobaric densities; specific heats; speeds of sound; vapor pressures.

1. INTRODUCTION

The economic importance of ethane, as one of the major components of liquefied natural gas (LNG) mixtures, is well known. Our objective is to produce basic thermodynamic information, needed for the prediction of the thermophysical properties of liquefied natural gas mixtures. For the wide range of compositions encountered, it will be necessary to utilize accurate thermodynamic properties of the pure components.

In [30] we computed tables of provisional values for the thermodynamic functions based on available specific heats and PVT data up to about 1972. To enter compressed liquid states at low temperatures we used a path of specific heats C_p along a high-pressure isobar [24].

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* This work was carried out at the National Bureau of Standards under sponsorship of the American Gas Association, Inc., 1515 Wilson Boulevard, Arlington, VA 22209.

Nearly all of the analytical formulations of physical properties data in this report are new as compared with [30]. A major contribution of present work is the further development of a rational equation of state. As in [31], our description of the $P(\rho,T)$ surface originates on a given liquid-vapor coexistence boundary (vapor-pressure and orthobaric densities equations). It yields a maximum in the specific heats $C_v(\rho,T)$ at the critical point, and has only five arbitrary coefficients to be found by least squares from experimental P-ρ-T data.

New experimental data from this laboratory, used in present work, include the melting line [78]; vapor-pressures and PVT data [79]; specific heats, both for the saturated liquid and for single phases [66]; and speeds of sound, both for the saturated liquid and for single phases [86]. New densities of the saturated liquid and vapor from [37, 75] and from other laboratories also have been included.

In present work we obtain thermofunctions in compressed liquid states by computation around the critical point (see figure 1) using new specific heat data from this laboratory [66] for $C_v(T)$ along the isochore at 14.5 mol/ℓ, and $C_\sigma(T)$ for the saturated liquid at temperatures below T_a of figure 1. Symbols and units of this report, listed in Appendix A, are similar to those for methane [29].

2. PHYSICAL PROPERTIES AND THEIR REPRESENTATION

2.1 Fixed-Point Values

The values selected are presented in Appendix B.

(a) The Triple Point

The triple-point temperature for ethane is from recent measurements by Straty and Tsumura [78]. The pressure is obtained from our vapor-pressure equation (2). The liquid density was assigned for consistency with our fitting function (3-a) for saturated liquid densities. The vapor density is obtained from our fitting function (3-b) for saturated vapor densities.

(b) The Critical Point

The critical-point temperature is from Douslin and Harrison [18]. The pressure is given by our vapor-pressure equation (2). The density was selected tediously by trial, based on detailed examinations of the critical isotherm and the rectilinear diameter very near the critical point. Our selected critical density of 6.80 mol/ℓ is lower than the value 6.86 mol/ℓ, obtained via the rectilinear diameter analysis of orthobaric liquid and vapor densities of Sliwinski. Other reported critical densities in mol/ℓ are: Douslin and Harrison, 6.87; Strumpf, et al., 6.83 ± 0.07; Miniovich and Sorina, 6.79 ± 0.02. Older critical densities reviewed in [18, 21, 83], however, range from 6.75 ± .07 to 7.32 mol/ℓ, a spread of almost ten percent.

(c) The Boiling Point

At the normal boiling point (1 atm = 1.01325 bar), the temperature in Appendix B is from our vapor-pressure equation (2). The liquid and vapor densities are from the orthobaric densities equations (3-a), and (3-b).

2.2 Melting Line and Vapor Pressures

The melting pressures of ethane are from Straty and Tsumura [78]. In the Simon equation,

$$P = P_t + A \cdot [(T/T_t)^{\varepsilon} - 1], \qquad (1)$$

their parameters are T_t = 90.348 K, A = 2559.65 bar, and ε = 2.179. The exceedingly small value which we use for P_t is from Appendix B.

The vapor-pressure equation (2) for ethane is a modification of our earlier form [30]. Define the arguments $x(T) \equiv (1-T_t/T)/(1-T_t/T_c)$, and $u(T) \equiv (T-T_t)/(T_c-T_t)$, when the equation is

$$\ell n(P) = a + b \cdot x + c \cdot u + d \cdot u^2 + e \cdot u^3 + f \cdot u \cdot (1-u)^{\varepsilon}. \qquad (2)$$

Coefficients of (2) used in present work (for P in bar) are ε = 1.30 and

a = -11.38996 24306	d = 5.42844 31006
b = 18.84522 82876	e = -1.36232 70362
c = - 7.63541 51345	f = 0.76924 92586

Table 1 compares experimental data with calculated pressures from (2).

2.3 The Orthobaric Densities

(a) The saturated liquid density function is constrained to both the triple- and critical-points. Define the variables--

$$x(T) \equiv (T_c-T)/(T_c-T_t),$$

$$y(\rho) \equiv (\rho-\rho_c)/(\rho_t-\rho_c),$$

$$Y(\rho,T) \equiv (y-x)/(x^{\varepsilon}-x),$$

when the equation is--

$$Y = a + b \cdot x^{1-\varepsilon} + c \cdot x, \qquad (3\text{-a})$$

ε = 1/3	b = 0.2818 66182
a = 0.7196 84501	c = -0.2899 37306

Table 2 compares experimental data with calculated results from (3-a).

(b) The saturated vapor density function is constrained only at the critical point. We use an estimated value for the triple point density, $d_k = 1.52 \cdot 10^{-6}$ mol/ℓ, merely to obtain simple values for the coefficients. Define two arguments--

$$x(T) \equiv (T_c - T)/(T_c - T_t),$$

$$u(T) \equiv (T_c/T - 1)/(T_c/T_t - 1)$$

and the dependent variable--

$$Y(\rho) \equiv \ell n(d_c/d)/\ell n(d_c/d_k),$$

when the equation is--

$$Y = A_1 \cdot u + A_2 \cdot x^{\varepsilon} + \sum_{i=3}^{6} A_i \cdot x^{i/3}, \qquad (3\text{-b})$$

with $\varepsilon = 0.35$, and--

$A_1 = 1.2023\ \ 48669$ $\qquad$ $A_4 = -0.9803\ \ 17935$

$A_2 = 0.1100\ \ 05895$ $\qquad$ $A_5 = 1.3387\ \ 56298$

$A_3 = 0.1371\ \ 69205$ $\qquad$ $A_6 = -0.8077\ \ 62749$

Table 3 compares experimental data with calculated results from (3-b).

2.4 The Virial Equation of State

The following are taken directly from [30]. As seen below, the critical parameters T_c, d_c differ from values in Appendix B. For the virial equation, these are merely arbitrary reducing constants which do not affect accuracy of the equation. They are retained from the original work [30] because in present work we repeatedly varied these parameters in developing the equation of state, and it is quite impractical repeatedly to readjust the virial equation. For the virial equation of state,

$$Pv/RT = 1 + B(T) \cdot \sigma + C(T) \cdot \sigma^2 + \ldots \qquad (4)$$

the second and third coefficients B(T), C(T) are dimensionless. We reduce temperature and density at the critical point, $x \equiv T/T_c$, $\sigma \equiv d/d_c$. Following initial research on the representation of these coefficients, we adopted McGlashan and Potter's formula for B(T), [53],

$$B(T) + B_1 + B_2/x + B_3/x^2 + B_4/x^{4.5}, \qquad (4\text{-a})$$

where,

$T_c = 305.37$ K $\qquad$ $d_c = 6.74$ mol/ℓ

$B_1 = 0.522\ \ 671,$ $\qquad$ $B_3 = -0.592\ \ 947,$

$B_2 = -1.106\ \ 244,$ $\qquad$ $B_4 = -0.041\ \ 944.$

Data from McGlashan and Potter were increased by 0.5 percent in absolute value to improve consistency with the data of Michels et al. [54], and of Douslin and Harrison [18] near 300 K. Table 4 compares data and calculated values.

For C(T) our new representation from [30] is

$$C(T) = [C_1/x + C_2/x^3 + C_3/x^5]\cdot(1-T_o/T), \qquad (4\text{-b})$$

where,

T_c = 305.37 K, d_c = 6.74 mol/ℓ
T_o = 217.8 K, C_2 = 0.83253,
C_1 = 0.24423, C_3 = 0.53488.

Table 5 compares data and calculated values.

The virial equation of state usually is accurate at densities up to about one third of the critical density. In present work it has been used to obtain saturated vapor densities at low temperatures by intersection with our vapor-pressure equation. It also has been used to synthesize PVT data along an isochore at 0.4 mol/ℓ, for use as input data in adjusting the equation of state.

2.5 The Equation of State for Single Phases

The PVT data used to adjust coefficients of the equation of state are summarized in table 6. From the data of A. K. Pal, reported by Pope [61], we selected only 13 isochores at the highest densities, runs Nos. 12 through 24 of table 12, because they were found to be self-consistent. We at first increased all of his densities by 0.5 percent to make these PVT data more compatible with data of other authors (table 6) via our equation of state. We finally used adjusted data of A. K. Pal kindly communicated privately by Professor R. Kobayashi, J. F. Ely et al. of the Chemical Engineering Department, Rice University. We omitted the data of Reamer et al. and of Tomlinson because those of Douslin and Harrison were believed to be more accurate.

Background on this equation of state occurs in our work on methane and ethane [29, 30], and in summary reports [31, 32]. As described previously, this equation originates on a given, liquid-vapor coexistence boundary, and ensures a maximum in the specific heats, $C_v(\rho,T)$, at the critical point.

For a given density (isochore) we obtain the coexistence temperature $T_\sigma(\rho)$ by iteration from the orthobaric densities, equations (3-a) and (3-b). Placing this in equation (2) yields the vapor pressures $P_\sigma[T_\sigma(\rho)]$ as a function of density. The equation of state used here for ethane is described in [32],

$$P = P_\sigma(\rho) + \sigma R\cdot[T-T_\sigma(\rho)] + \sigma^2 RT_c\cdot F(\rho,T), \qquad (5)$$

where

$$F(\rho,T) \equiv B(\rho)\cdot \Phi(\rho,T) + C(\rho)\cdot \Psi(\rho,T).$$

Densities $\sigma \equiv d/d_c$ are reduced at the critical point, and the gas constant is defined for dimensional consistency as $R \equiv (0.0831434)\cdot(d_c)$, bar/K.

The first of the temperature-dependent functions in (5) is

$$\Phi(\rho,T) \equiv x^{1/2} \cdot \ell n(u), \qquad (5\text{-a})$$

where

$$x \equiv T/T_c, \qquad u(\rho,T) \equiv T/T_\sigma(\rho).$$

The value of $\Phi(\rho,T)$, and of its second derivative, $\partial^2\Phi/\partial T^2$, both are zero everywhere on the coexistence boundary at $T = T_\sigma(\rho)$.

The second temperature-dependent function in (5) is $\Psi(\rho,T)$. It is nonanalytic, designed to give a maximum in specific heats at the critical point.

We first define the arguments,

$$\omega(\rho,T) \equiv 1-\Theta(\rho)/T,$$

$$\omega_\sigma(\rho) \equiv 1-\Theta(\rho)/T_\sigma(\rho),$$

where $\Theta(\rho)$ is our locus of temperatures inside the coexistence envelope of figure 1,

$$\Theta(\rho) \equiv T_\sigma(\rho)\cdot\exp[-\alpha\cdot f(\rho)],$$

$$f(\rho) \equiv |\sigma-1|^3/(\sigma_t-1)^3,$$

$\sigma_t \equiv d_t/d_c$ is a constant, and d_t is density of liquid at the triple point.

The function $\Psi(\rho,T)$ now is defined as the difference,

$$\Psi(\rho,T) \equiv \psi(\rho,T) - \psi_\sigma(\rho), \qquad (5\text{-b})$$

such that $\Psi = 0$ at coexistence. Any component function $\psi_\sigma(\rho)$ at coexistence is obtained from any function $\psi(\rho,T)$ merely by replacing T with $T_\sigma(\rho)$.

The component function selected for ethane after tedious investigations is--

$$\psi(\rho,T) \equiv \delta/x + (1-\delta)\cdot[1-\omega + \omega\cdot\ell n(\rho)],$$

where $0 \leq \delta \leq 1$. Sufficiently far away from the critical point, Ψ behaves roughly like $1/T$, similar to the term $1/T^2$ found in the well-known, Beattie-Bridgeman equation of state.

The coefficients in (5) were developed for ethane--

$$B(\rho) \equiv B_1 + B_2\cdot\sigma + B_3\cdot\sigma^2, \qquad (5\text{-c})$$

$$C(\rho) \equiv (\sigma-1)\cdot(\sigma-C_o)\cdot[C_1 + C_2\cdot\sigma + C_3\cdot\sigma^2]. \qquad (5\text{-d})$$

The parameters of equation of state (5) for ethane are--

$\alpha = 1$, $\delta = 2/3$, $C_o = 2$,

$B_1 = 0.4875\ \ 2227\ \ 313$	$C_1 = -0.4311\ \ 3918\ \ 548$
$B_2 = 0.3319\ \ 8750\ \ 982$	$C_2 = 0.0$
$B_3 = 0.0685\ \ 4249\ \ 828$	$C_3 = 0.0377\ \ 9460\ \ 468$

Table 7 shows behavior of the coefficients, $B(\rho)$, $C(\rho)$.

In adjusting the equation of state to PVT data we have obtained a well-behaved critical isotherm as follows. We constrain the slope $(\partial P/\partial T)$ of the critical isochore to equal the slope (dP_σ/dT) of the vapor pressure equation at the critical point, via the least squares program of R. D. McCarty [51]. We then vary the slope (dP_σ/dT) of the vapor pressure equation at the critical point, by adjusting the exponent, ε, in equation (2), to obtain a best "fit" of the experimental PVT data. Adjusting exponent, ε, in equation (2) has no significant effect upon the representation of experimental vapor pressure data in table 1. We finally explore the effect of small changes in the assigned critical density upon detailed behavior of the critical isotherm very near the critical point, in order to eliminate negative slopes of this isotherm, as demanded by equations (14) and (15).

2.6 The Ideal Gas Thermodynamic Functions

For use in our computations we have represented the internal energies of Chao et al. [12], by the following empirical power series

$$(E^o - E^o_o)/RT = 3.0 + \sum_{i=1}^{9} A_i \cdot (T/100)^{(i+3)/3}, \qquad (6)$$

The specific heats are obtained by differentiation,

$$C^o_v(T) = dE^o/dT,$$

and the entropies by integration,

$$\Delta S^o = \int C^o_p \cdot dT/T.$$

The coefficients for (6) are,

A_o =	21.705 718	A_5 =	906.218 4427
A_1 =	65.498 641	A_6 =	-459.230 2545
A_2 =	-362.011 5914	A_7 =	143.030 0226
A_3 =	853.340 8616	A_8 =	-25.074 95605
A_4 =	-1123.601 6220	A_9 =	1.897 540044

The coefficient A_o is the dimensionless integration constant for S^o/R. The concise computations are given by computer subroutine IDEAL in Appendix D. Table 8 gives comparisons with the data, and table 9 gives values interpolated by means of (6).

We have compared the results of Chao et al. with those obtained earlier by Ziegler et al., (values in Joules, moles, kelvins),

T = 200 K	$H^o-H^o_o$	S^o	C^o_p
Ziegler et al. [93]	7281.4	210.72	42.45
Chao et al. [12].	7257.6	210.50	42.26

We see a difference of 24 J/mol in $(H^o-H^o_o)$, or 0.3 percent. We have not further compared these independent calculations. Bier et al. [4] have found a change in the slope of $C^o_p(T)$ beginning near 325 K, with values of $C^o_p(T)$ as much as 1.6 percent smaller than from Chao et al. [12] at higher temperatures.

2.7 The Heats of Vaporization

Experimental data of Wiebe [89], Douslin [18], and Furtado [24] have been represented as follows,

$$Q_{vap} = \sum_{i=1}^{6} A_i \cdot x^{i/3}, \text{ kJ/mol}, \qquad (7)$$

where the argument is $x(T) \equiv (T_c - T)/(T_c - T_t)$, and

T_t = 90.348 K
A_1 = 12.857 784
A_2 = 5.409 5302
A_3 = 33.835 851
T_c = 305.33 K
A_4 = -97.520 486
A_5 = 100.849 76
A_6 = -37.933 878

Comparisons with the data are given in table 10.

2.8 Specific Heats $C_v(T)$ at $d_b \equiv 14.5$ mol/ℓ

As described in section 3.3, below, these data are used to obtain thermofunctions in compressed liquid states by computation around the critical point, figure 1.

We adjusted data of three experimental $C_v(\rho,T)$ isochores from [66] (runs Nos. 1, 8, 9 of table 14) to the assigned density of $d_b \equiv 14.5$ mol/ℓ by means of the present equation of state, and then represented these data with a standard deviation of 0.093 J/mol/K by use of the argument $x \equiv T/T_c$, where T_c = 305.33 K,

$$C_v(T,d_b) = a/x + b + c \cdot x + d \cdot x^2, \text{ J/mol/K}, \qquad (8)$$

a = 64.02530
b = -163.36173
c = 205.55275
d = -54.77598

2.9 Specific Heats for Saturated Liquid

As described in section 3.3, below, these experimental data are used to obtain thermofunctions in compressed liquid states at $T < T_a$ (see figure 1). As reported in [66], they were described as follows, with a standard deviation of 0.315 J/mol/K at $T_t < T < T_c$,

$$C_\sigma(T) = a + b \cdot T + c \cdot f(T) + d/T + e/T^2, \text{ J/mol/K}, \qquad (9)$$

where

$$f(T) \equiv T/(T_c - T)^{0.6},$$

T_c = 305.33 K
a = 22.6482 2683
b = 0.0879 6160 711
c = 1.0906 40627
d = 5371.2010 54
e = -212338.994

3. COMPUTATIONAL METHODS

The numerical values for E and H in this report are on the same absolute basis as those of Tester [83], obtained by use of $E_o^o = (4.1868)\cdot(4827.2)$ J/mol.

3.1 The Homogeneous Domain

The "homogeneous domain" of figure 1 includes all regions which can be attained along isotherms starting at zero density without crossing the vapor-liquid "dome" and without passing close to the critical point at $T > T_c$.

We start our computations with ideal gas thermodynamic functions at zero density, and then integrate along isotherms by use of the equation of state in the following relations,

$$\Delta E = \int [P - T\cdot(\partial P/\partial T)]\cdot d\rho/\rho^2, \tag{10}$$

$$\Delta C_v = -T\cdot\int(\partial^2 P/\partial T^2)\cdot d\rho/\rho^2 \tag{11}$$

$$\Delta S = R\cdot\ell n[P^o/(\rho RT)] + \int [R - (\partial P/\partial T)/\rho]\cdot d\rho/\rho. \tag{12}$$

Equation (12) is for use with initial entropies in hypothetical ideal gas states at P^o = 1 atm. For the compressed liquid at $T < T_b$ and $\rho > \rho_c$, we use

$$\Delta S = -\int (\partial P/\partial T)\cdot d\rho/\rho^2. \tag{12-a}$$

In each (ρ,T) state, reached by above integrations, we compute

$$H = E + P\cdot v, \tag{13}$$

$$C_p = C_v + T\cdot(\partial P/\partial T)^2/(\partial P/\partial \rho)/\rho^2 \tag{14}$$

$$W^2 = C_p\cdot(\partial P/\partial \rho)/C_v \tag{15}$$

3.2 The Vapor-Liquid Transition

As discussed below, we have used this computation only as a check against experimental heats of vaporization, and for closed-loop checks terminating on the saturated liquid.

We traverse the vapor-to-liquid "dome" of figure 1 by use of the Clapeyron equation, and $\Delta v = (v_\ell - v_g)$,

$$\Delta H = T\cdot(dP_\sigma/dT)\cdot\Delta v, \tag{16}$$

$$\Delta E = \Delta H - P_\sigma\cdot\Delta v, \tag{17}$$

$$\Delta S = \Delta H/T, \tag{18}$$

where (dP_σ/dT) is slope of the vapor-pressure curve.

3.3 Compressed Liquid States

As indicated by figure 1, we compute around the critical point into compressed liquid states at $T < T_b$ and $\rho > \rho_c$ as follows.

(1) On isotherm $T_b \equiv 330$ K use equations (10) and (12) up to $d_b \equiv 14.5$ mol/ℓ to obtain E_b and S_b of figure 1,

$$E(T_b,d_b) = 21,321.64 \text{ J/mol}, \quad S(T_b,d_b) = 165.4420 \text{ J/mol/K}.$$

(2) Along isochore $d_b \equiv 14.5$ mol/ℓ, obtain E and S at any temperature $T_a \leq T < T_b$ by use of equation (8) for $C_v(T,d_b)$,

$$\Delta E = \int_{T_b}^{T} C_v \cdot dT, \qquad \Delta S = \int_{T_b}^{T} C_v \cdot dT/T,$$

and finally, for E_a and S_a of figure 1 at $T = T_a \equiv 256.5624$ K,

$$E(T_a,d_b) = 17,628.86 \text{ J/mol}, \; S(T_a,d_b) = 152.8227 \text{ J/mol/K}.$$

(3) Along the saturated liquid path obtain E and S at any temperature $T_t \leq T < T_a$ by use of equation (9) for $C_\sigma(T)$,

$$\Delta E = \int_{T_a}^{T} C_\sigma \cdot dT + \int_{T_a}^{T} P_\sigma \cdot d\rho_\ell/\rho_\ell^2,$$

$$\Delta S = \int_{T_a}^{T} C_\sigma \cdot dT/T.$$

For ΔE, above, P_σ is the vapor pressure, and ρ_ℓ is density of the saturated liquid. The specific heat $C_v(\rho,T)$ at the saturated liquid boundary is computed by use of the equation of state in the thermodynamic relation,

$$C_v(\rho,T) = C_\sigma(T) + T \cdot (\partial P/\partial T) \cdot (d\rho_\ell/dT)/\rho_\ell^2.$$

(4) The final path of computation is along isotherms, starting with values for E, S, and C_v, either on isochore d_b at $T_a \leq T < T_b$, or on the saturated liquid boundary at $T_t \leq T < T_a$, by use of equations (10) through (15).

4. TESTS AND COMPARISONS OF CALCULATED AND MEASURED PROPERTIES

4.1 Calculated Critical Isotherm, P(ρ)

Table 11 gives a high-resolution examination of the P(ρ) critical isotherm from equation of state (5). It shows that the calculated slopes, $\partial P/\partial \rho$, are non-negative at all densities, as required by equations (14) and (15).

4.2 The P-ρ-T Compressibility Data

The last two columns of table 6 give the rms of relative density deviations, and the mean of relative pressure deviations, respectively, for each source of the P-ρ-T data.

Deviations of experimental densities and pressures from the smooth $P(\rho,T)$ surface of the equation of state (5) are given in table 12. The data of Michels et al. [54] and of Douslin and Harrison [18] are highly precise, and the deviations generally are systematic, as might be expected from an equation of state with as little freedom as (5). Any inaccuracies in the given liquid-vapor boundary will be propagated along calculated isochores because the equation of state originates on this boundary. At high densities in the compressed liquid, the derivative $\partial P/\partial\rho$ becomes extremely large, hence pressure deviations should be ignored in this region. Typical deviations of densities along isochores are plotted in figure 2.

4.3 Heats of Vaporization and Closure Computation

The last column of page 1 of table 23 gives experimental heats of vaporization interpolated from equation (7) for comparison with values in column Q,VAP computed by the Clapeyron equation.

Table 13 gives loop-closure computations for the saturated liquid. Values for enthalpy in column HLR are obtained by computing around the critical point, whereas values in column HLC are via the Clapeyron equation (see secs. 3.2, and 3.3).

Heats of vaporization obtained via the Clapeyron equation are uncertain by several percent (up to about 500 J/mol) due mainly to uncertainty in the vapor-pressures and of the vapor-pressure equation, and to the vapor densities at low temperatures. In table 10, moreover, we see that experimental heats of vaporization may differ by over 2 percent at 100 K, (about 350 J/mol). The deviations of about 0.5 percent (60 J/mol) seen in table 13 therefore do not exceed known uncertainties. The heats of vaporization have not been used as input data for present computations.

4.4 Specific Heats $C_v(\rho,T)$ and $C_p(\rho,T)$

Tables 14, 15 and 16 compare calculated specific heats with data of [66, 5, 24] respectively. As seen in tables 15 and 16, experimental specific heats $C_p(\rho,T)$ extrapolated to zero pressure differ by as much as $\pm$ 1 percent from the ideal gas values $C_p^o(T)$ used for our computations [equation (6) and table 8]. Excepting the critical region, at temperatures 305 $\pm$ 20 K, therefore, the maximum deviations of about two percent indicate satisfactory agreement between calculated and experimental results. Typical deviations of C_v along isochores are plotted in figure 3.

4.5 Speeds of Sound, $W_\sigma(T)$, and $W(\rho,T)$

Table 17 compares calculated speeds of sound for the saturated liquid with data from [60, 86, 87].

The deviations of about one percent in mid-range are quite satisfactory, considering the computational complexity, (section 3.3 and figure 1). At $T < 256.562$ K our computations start with smoothed experimental $C_\sigma(T)$ data, and the deviations increased toward two percent as $T \to T_t$. At $T > 256.562$ K we are entering the critical region, and the deviations increase toward ten percent as $T \to T_c$.

Tables 18 and 19 compare speeds of sound $W(\rho,T)$ with data of [82,86] respectively. Except for the compressed liquid at very low temperatures, and for the critical region, we consider the deviations of less than two percent to be quite satisfactory. Typical deviations of the speed of sound along isotherms are plotted in figure 4. Approaching the critical point, deviations for the saturated liquid approach ten percent.

5. TABLES OF PHYSICAL AND THERMODYNAMIC PROPERTIES

5.1 Calculated P-ρ-T Isochores and Isotherms

A selection of calculated isochores and isotherms is given by tables 20 and 21. They are useful to examine behavior of the surface generated by the equation of state, and to supplement the isobars of table 24 in obtaining P-ρ-T values and their derivatives.

5.2 The Joule-Thomson Inversion Locus

Table 22 gives our calculated P-ρ-T locus for the Joule-Thomson Inversion, $(\partial T/\partial P)_H = 0$. These results are obtained from the equation of state under the condition, $T\cdot(\partial P/\partial T) = \rho\cdot(\partial P/\partial \rho)$.

5.3 Thermophysical Properties of the Saturated Liquid

Table 23 gives physical and thermodynamic properties for the saturated liquid. Column headings are interpreted on the first page of this table.

5.4 Thermophysical Properties Along Selected Isobars

Table 24 gives physical and thermodynamic properties on isobars, as computed by methods of section 3. Explanations for the table are given on the first page. This table is extrapolated beyond the pressure range ($\sim$ 350 bar) of P-ρ-T data used for adjusting the equation of state.

5.5 Tables in British Engineering Units

Thermophysical properties in British engineering units are given in tables 25, 26, and 27. Temperatures are given at integral values on the Fahrenheit scale, and presures at integral values in pounds per square inch (psi) absolute. Conversions of units in Appendix C are similar to those in [29] except for the greater molecular weight of ethane as compared with methane.

6. ESTIMATED UNCERTAINTIES IN THE THERMODYNAMIC PROPERTIES TABLES

The problems of estimating uncertainties in a thermodynamic network (table 24), affecting the relative differences between tabulated values, have been discussed by Kuloor et al. [46].

A comment must be made concerning inherent difficulties near the critical point, which are independent of any equation of state. The derivatives $\partial\rho/\partial T$ and $\partial\rho/\partial P$ become infinite at the critical point. For this reason, experimental densities from different laboratories may disagree radically at any (P,T) point in the critical region, due merely to slight inconsistencies in the pressure and temperature scales used. At the other extreme, the derivative $\partial P/\partial\rho$ becomes very large for liquid at low temperatures. The slightest experimental error in density will yield (via any equation of state) deviations of the calculated pressure greatly exceeding the accuracy of measurement. In this domain any equation of state should be used only to find $\rho(P,T)$.

(1) Vapor pressures of table 1 from four different sources at $P > 1$ bar agree to less than 0.05 percent on average, which we take to be the absolute accuracy. At lower pressures, approaching the triple point, the data estimated by Ziegler et al. [93] may be uncertain by up to two percent.

(2) For the saturated liquid densities in table 2 we believe the most reliable data to be those of Sliwinski [75] and of Haynes and Hiza [37]. The former estimates experimental uncertainty of 0.08 percent near the critical point, diminishing to 0.01 percent at 283.2 K. The latter estimate overall experimental uncertainty of 0.1 percent near the triple point, diminishing to 0.06 percent at 300 K. The results from table 2, therefore, should have an absolute uncertainty no greater than 0.1 percent.

(3) The saturated vapor densities of Sliwinski [75] in table 3 have an estimated experimental uncertainty of 0.1 percent near the critical point, increasing to 0.36 percent at 283.2 K. Some of the data from Douslin and Harrison [18] in this range are several tenths of one percent higher than those of Sliwinski. Below 280 K we calculated these densities from our virial and vapor-pressure equations, estimating the uncertainty to approach two percent at the triple point. In summary, uncertainty of the saturated vapor densities increases from about 0.2 percent near the critical point to about 2.0 percent near the triple point.

(4) The selected reduced second virial coefficients in table 4 are seen to have been represented with a mean deviation of 0.14 percent. The estimated (not experimental) data of McGlashan and Potter [53], however, were increased by 0.5 percent in absolute value to improve consistency with other data. The overall uncertainty of table 4 may be under 0.5 percent.

The selected reduced third virial coefficients in table 5 have been represented with a mean deviation of about one percent. Original publications should be consulted in each case for estimates of experimental uncertainties in the data for virial coefficients.

(5) The highly constrained equation of state (5) used in present work yields derivatives which are qualitatively consistent with the known behavior of isochoric specific heats, $C_v(\rho,T)$, including a maximum at the critical point. Because this equation originates on the orthobaric, coexistence boundary, it gives deviations of the density up to two percent in the critical region, figure 2. Uncertainty of the densities from this

equation in table 24 therefore approach two percent in the critical region, $T_c \pm 10\%$, $d_c \pm 50\%$, but generally are less than 0.2% elsewhere for the data used in adjusting the equation of state, as seen by inspecting table 12.

(6) The ideal gas specific heats $C_p^o(T)$ recently measured by Bier et al. [4] differ by up to 1.6% from the spectroscopic calculations of Chao et al. [12] at temperatures above about 325 K. The overall effect upon $E^o(T)$ and $S^o(T)$ will be less due to integration. We nevertheless should for this reason set an upper bound of about two percent upon uncertainty of the important enthalpy differences in table 24.

(7) Experimental specific heats $C_\sigma(T)$ and $C_v(\rho,T)$, used in present computations, were obtained by Roder [66] who observed pressure and temperature, and then computed density of the sample via an equation of state. Uncertainty due to this estimated density may approach two percent near the critical point. As seen in figure 3, deviations from our calculated results are greater than this near the critical point.

The use of specific heats from [66] to enter compressed liquid states at $\rho > \rho_c$ and at $T < T_b \equiv 330$ K we believe increases uncertainty of enthalpies in this region to about 4%.

(8) Table 13 shows an inconsistency (amounting to about 0.5 percent of the heat of vaporization) for enthalpies of the saturated liquid computed via the Clapeyron equation, as compared with computation around the critical point. A further difficulty is that the specific heat $C_v(\rho,T)$ at point (E_b, S_b) of figure 1 is 56.11 J/mol/K as calculated from the ideal gas specific heat and equation of state along isotherm T_b, whereas the experimental value at this point is 54.05 J/mol/K via equation (8) and the data of [66]. We conclude that the accuracy of specific heats in table 24 is four percent.

(9) In summary, the uncertainty of enthalpies is four percent in compressed liquid domains at low temperature, increasing up to ten percent very close to the critical point, and diminishing toward two percent at low densities and for all densities at temperatures well above critical. The specific heats are uncertain by four percent. The speeds of sound are accurate to one percent, figure 4, except for the saturated liquid, where deviations approach ten percent near the critical point, table 17.

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APPENDIX A. Symbols and Units

Subscripts c and t refer to critical and liquid triple points.

Subscripts g and ℓ refer to saturated vapor and liquid.

Subscript σ refers to liquid-vapor coexistence (usually the liquid).

Superscript o refers to ideal gas states.

α, δ,	non-linear constants in the equation of state
$B(\rho)$, $C(\rho)$	density-dependent coefficients in the equation of state
$B(T)$, $C(T)$	second and third virial coefficients
$C_v(\rho,T)$,	molal heat capacity at constant volume, (J/mol)/K
$C_p(\rho,T)$,	molal heat capacity at constant pressure, (J/mol)/K
$C_\sigma(T)$	molal heat capacity for saturated liquid, (J/mol)/K
d,	density, mol/ℓ
d_k,	$1.52 \cdot 10^{-6}$ mol/ℓ for eq. (3-b)
$E(\rho,T)$,	the internal energy, J/mol
E_o^o	(4.1868)·(4827.2) J/mol, [83]
$f(\sigma)$	used in the definition of $\Theta(\rho)$
$F(\rho,T)$,	definition in the equation of state
$H(\rho,T)$,	the enthalpy, J/mol
J,	the joule, 1 N-m,
ℓ,	the liter, 10^{-3} m^3
mol,	30.07 grams of ethane (C^{12} = 12 scale)
P,	pressure in bars, 1 bar = $10^5 N/m^2$ (1 atm = 1.01325 bar)
$P_\sigma(T)$	the vapor pressure, bar
$P_\sigma(\rho)$,	$P_\sigma[T_\sigma(\rho)]$, vapor pressure as function of density
$\Phi(\rho,T)$,	function in the equation of state
$\Psi(\rho,T)$,	function in the equation of state
Q_{vap},	ΔH_{vap}, the heat of vaporization, J/mol
R,	the gas constant, 8.31434 (J/mol)/K, 0.0831434 (bar-ℓ/mol)/K
ρ,	d/d_t, density reduced at the liquid triple point
σ,	d/d_c, density reduced at the critical point
$S(\rho,T)$	the entropy, (J/mol)/K
T,	temperature, K, (IPTS-68), [68]
T_a,	256.5624 K, (figure 1)
T_b,	330.0000 K, (figure 1)
$T_\sigma(\rho)$,	liquid-vapor coexistence temperature, K
$\Theta(\rho)$,	defined locus of temperatures
$u(\rho,T)$,	$T/T_\sigma(\rho)$ for eq. (5-a)
v,	1/d, molal volume, ℓ/mol
$\omega(\rho,T)$,	$[1-\Theta(\rho)/T]$ for the equation of state
$W(\rho,T)$,	the speed of sound, meters/second
$x(T)$,	T/T_c for the equation of state

$x(T)$, variously defined for other equations

$x_\sigma(\rho)$, $T_\sigma(\rho)/T_c$, reduced temperature at coexistence, for the equation of state.

APPENDIX B. Fixed-Point Values for Ethane

	Triple Point	Boiling Point	Critical Point
Temperature, K.	90.348	184.574	305.33
Pressure, bar	$1.1308 \cdot 10^{-5}$	1.01325	48.714
Density, mol/ℓ	--	--	6.80
Vapor	$1.5154 \cdot 10^{-6}$	0.068381	---
Liquid	21.680	18.094	--

APPENDIX C. Conversion of Units

Temperature,	1.8 Rankine (R)	= 1 Kelvin, (K)
Pressure,	14.69595 psi	= 1 atm = 1.01325 bar
Volume,	1 cu ft	= 28.31685 liter, (ℓ)
Mol. Wt., C_2H_6,	1 mol	= 30.070 gram, (g), (C^{12} scale)
Mass,	1 lb (avoir.)	= 453.5924 g
Density, C_2H_6	1 lb/cu ft	= 0.5327 0577 mol/ℓ
Isochore slope,	1 PSI/R	= 0.1241 0562 bar/K
Isotherm slope, C_2H_6,	1 PSI cu ft/lb	= 0.1294 290 bar·ℓ/mol
Energy	1 BTU	= 1054.350 joule, (J)
Specific energy for ethane,	1 BTU/lb	= 69.896 0223 J/mol
Specific entropy and heat capacity of ethane,	1 (BTU/lb)/R	= 125.812 840 (J/mol)/K
Speed of sound,	1 ft/s	= 0.30480 m/s

```
      PROGRAM ETHRM7A (INPUT,OUTPUT)
C     REVISION OF ETHANE THERMOFUNCTIONS, FEB. 1 THRU NOV. 20, 1976.
C     ENTER COMPR. LIQ. STATES VIA NBS(RODER) CV ON ISOCHORE RB, AND CSAT.
C     NOTE OMISSION OF FINDSATF(T,M),  USE DENGASF(T), DENLIQF(T).
C     NOTE THAT TSATF(DEN) ITERATES ON DENGASF(T), DENLIQF(T).
      COMMON B1,B2,B3, C1,C2,C3, E1,E2,E3, ER
      COMMON/1/GK,AL,BB,BE,GA,DE,EP, DCRT,TCRT,PCRT,DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/4/ XB1,XB2, XC1,XC2, XE1,XE2, DXBDR,DXCDR,DXEDR
      COMMON/5/ DDSDT
      COMMON/6/ TSAT, THETA, PSAT
      COMMON/7/ TA,TB,PB,RB, EA,HA,SA, EB,HB,SB
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/9/ AU,BU,CU,DU, AS,BS,CS,DS,ES, ETB,STB,STA
      COMMON/10/ NFE, ETRP, EK(9)
      COMMON/99/ TI,EZZ, EZ,SZ,CVZ, HZ,CPZ
      DIMENSION PP(99)
    1 FORMAT(I5, 2F10.0)
    2 FORMAT(I5, 3F10.0)
    3 FORMAT(1H1 11X *LOOP CLOSURE CHECK FOR SATURATED LIQUID,* /
     1 12X *ENTHALPY HLR VIA NBS CV, HLC VIA CLAPEYRON EQN., J/MOL* //
     2 12X3HT,K 7X3HHLR 7X3HHLC 7X3HDIF 4X5HQ,VAP 2X8HDH/Q,PCT )
    4 FORMAT(5X 5I10, F8.2)
    5 FORMAT(1X)
    8 FORMAT(I4, F7.0, F6.0, 2F7.0)
    9 FORMAT(5X I5, 3F10.3, 2F10.2, F8.2)
   10 FORMAT(1H1 9X *ETHANE FUNCTIONS ON ISOCHORE RB = 14.5 MOL/L* //
     1 10X 7HAT TB =F8.3, 6H, PB =F8.3, 7H, DEN =F7.3//
     2 10X 4HEB =F10.2, 6H, HB =F10.2, 6H, SB =F10.4//
     3 10X 4HCV =F8.3, 10H, CV,XPT =F8.3///
     4 10X 7HAT TA =F9.4, 6H, PS =F8.3, 7H, DEN =F7.3//
     5 10X4HEA =F10.2, 6H, HA =F10.2, 6H, SA =F10.4//10X 4HCV =F8.3///
     6 10X 5HETB =E17.9, 7H, STB =E17.9, 7H, STA =E17.9)
   12 FORMAT(8F10.0)
   14 FORMAT(1H1 18X *ETHANE ISOBAR AT P =* F8.5, 4H BAR / )
   15 FORMAT(1H1 18X *ETHANE ISOBAR AT P =* I4, 4H BAR / )
   16 FORMAT(19X 1HT 6X3HDEN 6X3HVOL 5X5HDP/DT 5X5HDP/DD
     2 8X1HE 8X1HH 8X1HS 6X2HCV 6X2HCP 5X1HW /
     3 15X 5HDEG K 4X5HMOL/L 4X5HL/MOL 5X5HBAR/K 1X9HBAR-L/MOL 4X5HJ/MOL
     4 4X5HJ/MOL 2X7HJ/MOL/K 1X7HJ/MOL/K 1X7HJ/MOL/K 1X5HM/SEC )
   17 FORMAT(10X F10.3, F9.3, F9.5, F10.4, F10.3, 2F9.1,F9.3,2F8.2,I6)
   18 FORMAT(10X F10.3, F9.5, F9.3, F10.6, F10.3, 2F9.1,F9.3,2F8.2,I6)
   21 FORMAT(1H1 7X *RODER ETHANE SPECIFIC HEATS CV(D,T), J/MOL/K * //
     1 8X2HID 5X5HMOL/L 7X3HT,K 5X5HP,BAR 4X6HCV,XPT5X5HCALCD4X4HPCNT )
   22 FORMAT(1H1 7X *BIER ETHANE SPECIFIC HEATS CP(P,T), J/MOL/K * //
     1 8X2HID 5X5HP,BAR 7X3HT,K 5X5HMOL/L 8X2HCP 5X5HCALCD 4X4HPCNT )
C
C     CONSTANTS FOR EQNSTATE MARK VII,  4/12/76.
   23 WM = 30.07  $  WK = 100000/WM  $  Q = 1.01325  $  GKK = 0.0831434
   24 TTRP = 90.348  $  DTRP = 21.68  $  PTRP = 1.130842618E-5
   25 TCRT = 305.33  $  DCRT = 6.80  $  PCRT = PSATF(TCRT)
   26 DGAT = 1.5153661E-6  $  GK = DCRT*GKK  $  EZZ = 4.1868*4827.2
   27 AL = 1  $  DE = 2.0/3.0  $  ER = 2  $  BB=BE=GA=EP=0
   28 B1 = 0.48752227313  $  B2 = 0.33198750982  $  B3 = 0.06854249828
   29 E1 =-0.43113918548  $  E2 = 0.0  $  E3 = 0.03779460468
   30 CALL PEEK  $  CALL ISOTHRM
C     INTEGRATION CONSTANTS FOR CVSUMIT, SSATF(T).
   31 TB=330 $ RB=14.5 $ TA=TSATF(RB) $ X=TB/TCRT $ G=ALOG(X)
   32 AU=64.0253 $ BU=-163.36173 $ CU=205.55275 $ DU=-54.77598
   33 ETB = AU*G + BU*X + CU*X*X/2 + DU*X*X*X/3
   34 STB = -AU/X + BU*G + CU*X + DU*X*X/2
   35 AS=22.64822683 $ BS=0.08796160711 $ CS=1.090640627
   36 DS=5371.201054 $ ES=-212338.994 $ T=TA $ TD=(TCRT-T)**0.4
   37 STA = AS*ALOG(T) + BS*T - CS*TD/0.4 - DS/T - ES/2/T/T
```

Appendix D. Continued.

```
C     ESTABLISH TB,TA, EB,SB, EA,SA, ON ISOCHORE RB = 14.5 MOL/L.
   39 T = TB  $  P = PB = PVTF(T,RB,0)  $  CALL THRMOGS
   40 RC=DEN $ EB=E $ HB=H $ SB=S $ CVB=CV $ CVX=CVXF(T)
   41 T = TA  $  CALL CVSUMIT  $  EA = E  $  SA = S
   42 PSTA = PS = PSATF(TA)  $  HA = EA + 100*PS/RB
   43 PRINT 10, TB,PB,RC, EB,HB,SB, CVB,CVX, TA,PS,DEN, EA,HA,SA,CV,
     1 ETB, STB, STA   $   CALL ESATFIT
C
C     LOOP CLOSURE COMPARISON FOR SATURATED LIQUID.
   45 PRINT 3  $  DO 52 J=1,42  $  T = IT = 90 + 5*J  $  P = PSATF(T)
   46 CALL SATGSTR  $  DG = DEN  $  HG = H  $  DL = DENLIQF(T)
   47 Q = 100*T*DPSDT*(1/DG - 1/DL)   $   HLC = HG - Q
   48 IF(T.LT.TA) 49,50
   49 CALL SATLQTR  $  HLR = H  $  GO TO 51
   50 CALL THRMXL  $  HLR = H
   51 DH=HLC-HLR $ QPCT=100*DH/Q $ IHLR=HLR $ IHLC=HLC $ IDH=DH $ IQ=Q
   52 PRINT 4, IT, IHLR,IHLC, IDH,IQ, QPCT
   55 CALL JTLOCUS   $   CALL TABLIQ
   60 CALL WSATLIQ $ CALL TSUMURA $ CALL TERRES $ CALL FURTADO
C
C     COMPARE NBS(HMR) SPECIFIC HEATS, CV(R,T).
   70 PRINT 21  $  L = 0  $  DO 83 J=1,300
   71 READ 8, ID, PX,DX,T,CX  $  IF(ID) 72,84
   72 P = PVTF(T,DX,0)  $  L = L+1  $  IF(L.EQ.51) 73,74
   73 L = 0  $  PRINT 21
   74 IF(T.LT.TB) 75,81
   75 IF(T.LT.TA) 76,77
   76 CALL LIQTHRM  $  GO TO 82
   77 IF(T.LT.TCRT) 78,80
   78 PX = PSATF(T)  $  IF(P.GT.PX) 79,81
   79 CALL THRMOX  $  GO TO 82
   80 PX = PVTF(T,DCRT,0)  $  IF(P.GT.PX) 79,81
   81 CALL THRMOGS
   82 PCT = 100*(1-CV/CX)
   83 PRINT 9, ID, DX,T,P, CX,CV, PCT
   84 CONTINUE
C
C     COMPARE SPECIFIC HEATS, CP(R,T).
C     BIER,KUNZE,MAURER, J. CHEM. THERMODYN. 8, 857 (1976).
   85 PRINT 22  $  L = 0  $  DO 100 J=1,300
   86 READ 2, ID, TC,P,CP  $  IF(ID) 87,101
   87 T = 273.15 + TC  $  CX = WM*CP  $  L = L+1  $  IF(L.EQ.44) 88,89
   88 L = 0  $  PRINT 22
   89 IF(J.LT.10) 90,91
   90 TI = T  $  CALL IDEAL  $  CP=CPZ $ DEN=0  $  GO TO 99
   91 IF(T.LT.TB) 92,98
   92 IF(T.LT.TA) 93,94
   93 CALL LIQTHRM  $  GO TO 99
   94 IF(T.LT.TCRT) 95,97
   95 PX = PSATF(T)  $  IF(P.GT.PX) 96,98
   96 CALL THRMOX  $  GO TO 99
   97 PX = PVTF(T,DCRT,0)  $  IF(P.GT.PX) 96,98
   98 CALL THRMOGS
   99 PCT = 100.0*(1-CP/CX)
  100 PRINT 9, ID, P,T,DEN, CX,CP, PCT
  101 CONTINUE
C
C     COMPUTE THERMOFUNCTIONS ON ISOBARS.
C     EACH ISOBAR STARTS ON THE MELTING LINE.
C     ISOBARS AT P UNDER PCRT TRAVERSE THE DOME.
  110 IN = 1  $  NI = 69  $  READ 12, (PP(I),I=1,NI)
  111 DO 300 I=IN,NI  $  IK = I  $  IP = P = PP(I)
  112 IF(I.LT.5) 113,114
  113 PRINT 14, P  $  GO TO 115
```

Appendix D. Continued.

```
  114 PRINT 15, IP
  115 PRINT 16
  120 T = FINDTMF(P)  $  CALL LIQTHRM  $  V = 1/DEN  $  IW = W
  121 PRINT 17, T,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW
  122 IT = T/10  $  IF(P.LT.PCRT) 130,200
C
C     TWO MAIN CASES FOR P UNDER PCRT.
  130 TS = FINDTSF(P)  $  TX = TS + 10  $  K = L = 0
  131 DO 199 J=1,99  $  T = JT = 10*(IT + J)
  132 IF(P-PSTA) 133,133,150
C     MAIN CASE A FOR P NO GREATER THAN PSTA.
  133 IF(T.LT.TS) 134,136
  134 CALL LIQTHRM  $  V=1/DEN $ IW=W
  135 PRINT 17, T,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW  $  GO TO 199
  136 IF(T.LT.TX) 137,180
  137 T = TS  $  CALL SATLQTR  $  V=1/DEN $ IW=W
  138 PRINT 17, T,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW  $  PRINT 5
  139 CALL SATGSTR  $  V=1/DEN $ IW=W
  140 IF(P.LT.20.0) 141,142
  141 PRINT 18, T,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW  $  GO TO 143
  142 PRINT 17, T,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW
  143 T = JT  $  GO TO 180
C     MAIN CASE B FOR P GREATER THAN PSTA.
  150 IF(T-TA) 151,151,153
  151 CALL LIQTHRM  $  V=1/DEN $ IW=W
  152 PRINT 17, T,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW  $  GO TO 199
  153 IF(T.LT.TS) 154,156
  154 CALL THRMOX  $  V=1/DEN $ IW=W
  155 PRINT 17, T,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW  $  GO TO 199
  156 IF(T.LT.TX) 157,180
  157 T = TS  $  CALL THRMXL  $  V=1/DEN $ IW=W
  158 PRINT 17, T,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW  $  PRINT 5
  159 CALL SATGSTR  $  V=1/DEN $ IW=W
  160 IF(P.LT.20.0) 161,162
  161 PRINT 18, T,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW  $  GO TO 163
  162 PRINT 17, T,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW
  163 T = JT
C     CASES FOR HOMOGENEOUS DOMAIN, DEN ≤ DCRT, OR T ≥ TB.
  180 IF(JT.GT.500) 181,183
  181 K = K+1  $  T = JT = JT + 10*K
  182 IF(JT.GT.700) 300,183
  183 CALL HOMOTRM  $  V=1/DEN $ IW=W
  184 IF(P.LT.20.0) 185,186
  185 PRINT 18, T,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW  $  GO TO 199
  186 PRINT 17, T,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW
  199 CONTINUE
C
C     CASES FOR P > PCRT.
  200 K=L=0  $  DO 230 J=1,99  $  T=JT=10*(IT+J)  $  IF(T.LT.TB) 201,220
  201 IF(T.LT.TA) 202,205
  202 CALL LIQTHRM  $  V = 1/DEN  $  IW = W
  203 PRINT 17, T,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW  $  GO TO 230
  205 IF(T.LT.TCRT) 211,206
  206 PX = PVTF(T,DCRT,0)  $  IF(P.GT.PX) 211,225
C     CASE FOR REGION X AT TA < T < TB, P ABOVE CRITICAL ISOCHORE.
  211 CALL THRMOX  $  V = 1/DEN  $  IW = W
  212 PRINT 17, T,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW  $  GO TO 230
C     CASES FOR HOMOGENEOUS DOMAIN, DEN ≤ DCRT, OR T ≥ TB.
  220 IF(JT-500) 225,225,221
  221 K = K + 1  $  T = JT = JT + 10*K
  222 IF(JT-700) 225,225,300
  225 CALL HOMOTRM  $  V = 1/DEN  $  IW = W
  226 PRINT 17, T,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW
  230 CONTINUE
```

```
      300 CONTINUE
      999 STOP     $     END



        FUNCTION CSATXF(T)
C     FORMULATION OF NBS(RODER) ETHANE DATA, 3/76,  J/MOL/K.
C     THE STANDARD DEVIATION IS 0.315.
        COMMON/9/ AU,BU,CU,DU, AS,BS,CS,DS,ES, ETB,STB,STA
        DATA (TC = 305.33)
      1 IF(T.LT.TC) 2,9
      2 F = T/(TC-T)**0.6
      3 CSATXF = AS + BS*T + CS*F + DS/T + ES/T/T   $  RETURN
      9 CSATXF = 0    $   RETURN  $  END



        FUNCTION CSUMF(N,T,DA,DB)
C     DELTA CV = -T*INTEGRAL((D2P/DT2)/D**2)*DD.
        COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      2 DX = (DB-DA)/N   $  CSUMF = 0   $   DO 5 J=1,N
      3 DN = DA + (J-0.5)*DX     $    P = PVTF(T,DN,0)
      5 CSUMF = CSUMF - D2PDT2*DX/DN/DN
      9 CSUMF = 100*T*CSUMF      $     RETURN    $    END



        FUNCTION CUBERT(X)
C     CUBE ROOT MISSING FROM 6600 COMPUTER LIBRARY.
      1 E = 1.0/3.0    $   IF(X) 2,3,4
      2 CUBERT = -ABS(X)**E    $    RETURN
      3 CUBERT = 0.0    $    RETURN
      4 CUBERT = X**E    $    RETURN  $  END



        SUBROUTINE CVSUMIT
C     GIVEN P,T, GET DEN AND SOME FUNCTIONS AT POINT (T,RB).
C     START AT TB = 330 K WITH VALUES EB, SB,  THEN, ON ISOCHORE RB -
C     USE INTEGRALS OF CVXF(T) FOR DEL(E), DEL(S) FROM TB DOWN TO T.
C     YIELDS ONLY DEN, E,S, CV.
        COMMON/7/ TA,TB,PB,RB, EA,HA,SA, EB,HB,SB
        COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
        COMMON/9/ AU,BU,CU,DU, AS,BS,CS,DS,ES, ETB,STB,STA
        DATA (TC = 305.33)
      1 X = T/TC   $  G = ALOG(X)
      3 ETT = AU*G + BU*X + CU*X*X/2 + DU*X*X*X/3
      5 E = EB + TC*(ETT - ETB)
      6 STT = -AU/X + BU*G + CU*X + DU*X*X/2
      8 S = SB + STT - STB
      9 DEN = RB   $  CV = CVXF(T)     $    RETURN   $  END
```

```
      FUNCTION CVXF(T)
C     FORMULATION OF NBS(RODER) ETHANE DATA, 3/76,  J/MOL/K.
C     CVXF IS CV(T) ALONG THE ISOCHORE,  D ≡ 14.5 MOL/L.
C     VALID FROM TB ≡ 330 K DOWN TO TA = 256.562 K.
C     STANDARD DEVIATION FOR 46 POINTS I  0.093.
      COMMON/9/ AU,BU,CU,DU, AS,BS,CS,DS,ES, ETB,STB,STA
     1 X = T/305.33  $  CVXF = AU/X + BU + CU*X + DU*X*X
     2 RETURN   $   END
```

```
      FUNCTION DELTAF(T,D)
C     GET (T*DP/DT - D*DP/DD) FOR THE J-T INVERSION CURVE.
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      DATA (DCRT=6.80),(TCRT=305.33)
     1 IF(T-TCRT) 2,4,4
     2 DL = DENLIQF(T)  $  IF(D-DL) 3,3,4
     3 DELTAF = 1.0E+100  $  RETURN
     4 P = PVTF(T,D,1)
     5 DELTAF = ABS(T*DPDT-D*DPDD)   $   RETURN  $  END
```

```
      FUNCTION DENGASF(T)
C     DEN = DCRT*EXP(-YN*Y),    YN = LN(DCRT/DGAK),
C     X ≡ (TC-T)/(TC-TT),   Q ≡ X**1/3,   Z ≡ (TC/T-1)/(TC/TT-1),
C     Y = A1*Z + A2*XE + A3*Q3 + A4*Q4 + . . .
      COMMON/5/ DDSDT
      DIMENSION AV(6)
      DATA (NFG=6),(EG=0.35),(DGAK=1.52E-6)
      DATA (TTRP=90.348),(TCRT=305.33),(DCRT=6.80)
      DATA(AV = 1.202348669, 0.110005895, 0.137169205,
     1 -0.980317935, 1.338756298, -0.807762749)
     1 FORMAT(1H0 9X *DENGASF = 0, T EXCEEDS TCRT. * / )
     2 IF(TCRT-T) 3,4,5
     3 PRINT 1  $  STOP
     4 DENGASF = DCRT  $  DDSDT =  1.0E+10  $  RETURN
     5 XN = TCRT-TTRP  $  ZN = TCRT/TTRP-1  $  YN = ALOG(DCRT/DGAK)
     6 X = (TCRT-T)/XN  $  DXDT = -1.0/XN
     7 Z = (TCRT/T-1)/ZN  $  DZDT = -TCRT/ZN/T/T
     8 Q = CUBERT(X)  $  Q1T = Q*DXDT/3/X
     9 XE = X**EG  $  XE1T = EG*XE*DXDT/X
    11 Y = AV(1)*Z + AV(2)*XE  $  Y1T = AV(1)*DZDT + AV(2)*XE1T
    12 DO 14 K=3,NFG  $  QK = Q**K  $  Y = Y + AV(K)*QK
    14 Y1T = Y1T + AV(K)*K*QK*Q1T/Q
    18 DENGASF = DCRT*EXP(-YN*Y)  $  DDSDT = -YN*Y1T*DENGASF
    20 RETURN   $   END
```

Appendix D. Continued.

```
      FUNCTION DENLIQF(T)
C     DEN = DCRT + YN*(X + (XE-X)*Y).
C     Y = A1 + A2*X**(1-EL) + A3*X,    YN = DTRP-DCRT.
      COMMON/5/ DDSDT
      DIMENSION AW(3)
      DATA (TTRP=90.348),(TCRT=305.33),(DCRT=6.80),(DTRP=21.68)
      DATA(AW = 0.719684501, 0.281866182, -0.289937306)
    1 FORMAT(1H0 9X *DENLIQF = 0, T EXCEEDS TCRT. * / )
    2 EL = 1.0/3.0   $   IF(TCRT-T) 3,4,5
    3 PRINT 1   $   STOP
    4 DENLIQF = DCRT  $  DDSDT = -1.0E+10  $  RETURN
    5 XN=TCRT-TTRP $ YN=DTRP-DCRT $ X=(TCRT-T)/XN $ DXDT=-1.0/XN
    7 XE = X**EL  $  XE1 = EL*XE/X  $  V = X/XE  $  V1X = (1-EL)/XE
    9 Y = AW(1) + AW(2)*V + AW(3)*X  $  Y1X = AW(2)*V1X + AW(3)
   10 W = XE - X  $  W1X = XE1 - 1  $  DENLIQF = DCRT + YN*(X + W*Y)
   15 DDSDT = YN*DXDT*(1 + W*Y1X + W1X*Y)   $   RETURN  $  END
```

```
      FUNCTION ESATF(T)
C     FORMULATED TO SAVE COMPUTER TIME.   VALID FOR TTRP ≤ T ≤ TA.
C     ESAT/ETRP - 1  =  A*X + B*X2 + C*X3 + . . .
      COMMON/10/ NFE, ETRP, EK(9)
      DIMENSION A(7)
      DATA (TTRP=90.348),(XN=214.982),(ETR=5317.541)
      DATA(A = 2.74937313, 0.20467040, -0.64844727, 1.98167119,
     1 -1.77279598, 0.44801726, 0.31994366)
    1 X = (T-TTRP)/XN  $  E = 1  $  DO 2 J=1,7
    2 E = E + A(J)*X**J  $  ESATF = E*ETR    $   RETURN  $  END
```

```
      SUBROUTINE ESATFIT
C     GET ESAT DATA BELOW TA VIA ESATSUM(T), FIT.  X ≡ (T-TT)/(TC-TT).
C     ESAT/ETRP - 1  =  A*X + B*X2 + C*X3 + . . .
      COMMON/1/GK,AL,BB,BE,GA,DE,EP, DCRT,TCRT,PCRT,DGAT,DTRP,TTRP,PTRP
      COMMON/7/ TA,TB,PB,RB, EA,HA,SA, EB,HB,SB
      COMMON/10/ NFE, ETRP, EK(9)
      COMMON/999/ NFUN,Y,F(30)
      DIMENSION TT(35),XX(35),ESX(35)
    1 FORMAT(1H1 18X *FIT ETHANE ESAT(T), ETRP =*F10.3//3(10X3E17.9/)/
     1 17X 3HT,K 7X3HESX 5X5HCALCD 6X4HPCNT )
    2 FORMAT(10X F10.3, 2F10.1, F10.3)
    3 FORMAT(1H0 12X 4HNP =I3, 10H, RMSPCT =F7.4)
    7 ETRP = ESATSUM(TTRP)  $  XN = TCRT-TTRP  $  DO 8 K=1,9
    8 EK(K) = 0  $  NP = 34  $  NFUN = NFE = NF = 7
   10 DO 20 J=1,NP  $  IF(J.EQ.NP) 13,14
   13 T = TA  $  GO TO 15
   14 T = 90 + 5*J
   15 TT(J) = T  $  X = (T-TTRP)/XN  $  XX(J) = X
   16 F(1)=X $ F(2)=X*X $ F(3)=X*X*X $ F(4)=F(3)*X $ F(5)=F(4)*X
   17 F(6) = F(5)*X  $  F(7) = F(6)*X
   18 ESX(J) = ESATSUM(T)  $  Y = ESX(J)/ETRP - 1
   20 CALL FIT  $  CALL COEFF  $  DO 21 K=1,NF
```

```
   21 EK(K) = F(K)  $  PRINT 1, ETRP, (EK(K),K=1,9)
   24 SS = 0  $  DO 30 J=1,NP
   25 X = XX(J)  $  EC = 1  $  DO 26 K=1,NF
   26 EC = EC + EK(K)*X**K  $  EC = ETRP*EC
   27 PCT = 100.0*(1-EC/ESX(J))  $  SS = SS + PCT*PCT
   30 PRINT 2, TT(J), ESX(J), EC, PCT
   31 SS = SQRT(SS/NP)  $  PRINT 3, NP, SS
   99 RETURN  $  END
```

```
      FUNCTION ESATSUM(T)
C     START WITH E = EA AT TA = 256.562 K,  THEN -
C     USE CSATXF(T), PSATF(T), DENLIQF(T), FOR SUMMATION -
C     DEL(E) = SUM(CSAT*DT) + SUM(P*DD/DS**2).
      COMMON/5/ DDSDT
      COMMON/7/ TA,TB,PB,RB, EA,HA,SA, EB,HB,SB
    1 E = EA  $  TR = T-TA  $  N = ABS(TR)/2 + 2  $  DT = TR/N
    2 DO 6 J=1,N  $  TJ = TA + (J-0.5)*DT
    3 CS = CSATXF(TJ)  $  PS = PSATF(TJ)
    4 DS = DENLIQF(TJ)  $  DD = DDSDT*DT
    5 E = E + CS*DT + 100*PS*DD/DS/DS
    6 CONTINUE  $  ESATSUM = E  $  RETURN  $  END
```

```
      FUNCTION ESUMF(N,T,DA,DB)
C     GET DELTA E OVER DENSITY RANGE FROM DA TO DB.
C     DELTA E  =  INTEGRAL(P-T*(DP/DT))*DX/DN**2.
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
    2 DX = (DB-DA)/N  $  ESUMF = 0.0
    3 DO 5 J=1,N  $  DN = DA + (J-0.5)*DX  $  P = PVTF(T,DN,0)
    5 ESUMF = ESUMF + (P-T*DPDT)*DX/DN/DN
    9 ESUMF = 100*ESUMF  $  RETURN  $  END
```

```
      FUNCTION FINDENF(T,P)
C     ON ISOTHERM T, FIND DEN, MOL/L, TO MINIMIZE (P-PC) VIA EQNSTATE.
      COMMON/1/GK,AL,BB,BE,GA,DE,EP, DCRT,TCRT,PCRT,DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      DATA (DM = 23.0)
   41 FORMAT(1H0 9X *FINDENF = 0, FAILS TO CONVERGE. * / )
   42 FORMAT(1H0 9X *FINDENF = DCRT, DP/DR ZERO OR NEG. * / )
   43 FORMAT(1H0 9X *FINDENF = 0, DOUBLE-VALUED AT P = PSAT. * / )
    1 IF(T-TCRT) 2,5,8
    2 DG=DENGASF(T) $ DL=DENLIQF(T) $ PS=PSATF(T)  $  IF(P-PS) 3,32,4
    3 D = DG/2  $  GO TO 11
    4 D = (DL+DTRP)/2  $  GO TO 11
    5 DG=DL=DCRT  $  PS=PCRT  $  IF(P-PS) 6,33,7
    6 D = DCRT/2  $  GO TO 11
    7 D = 2*DCRT  $  GO TO 11
    8 IF(T.LT.400.0) 9,10
```

Appendix D. Continued.

```
 9 PC = PVTF(T,DCRT,0)   $  IF(P-PC) 6,33,7
10 D = DCRT
11 DO 30 J=1,50 $ DP=P-PVTF(T,D,1) $ IF(ABS (DP/P)-1.0E-6) 31,31,12
12 IF(DPDD) 34,34,13
13 DD = DP/DPDD   $  IF(ABS (DD/D)-1.0E-6) 31,31,14
14 D = D + DD    $   IF(D.GT.0.0) 16,15
15 D = DGAT    $   GO TO 30
16 IF(D.GT.DM) 17,18
17 D = DTRP  $  GO TO 30
18 IF(T-TCRT) 19,24,30
19 IF(P.LT.PS) 20,22
20 IF(D.GT.DG) 21,30
21 D = DG  $  GO TO 30
22 IF(D.LT.DL) 23,30
23 D = DL  $  GO TO 30
24 IF(P.LT.PCRT) 25,27
25 IF(D.LT.DCRT) 30,26
26 D = DCRT - 0.02  $  GO TO 30
27 IF(D.GT.DCRT) 30,28
28 D = DCRT + 0.02
30 CONTINUE  $  FINDENF = 0  $  PRINT 41  $  RETURN
31 FINDENF = D    $   RETURN
32 FINDENF = 0  $  PRINT 43  $  RETURN
33 FINDENF = DCRT  $  RETURN
34 FINDENF = DCRT  $  PRINT 42  $  RETURN  $  END
```

```
      FUNCTION FINDTMF(P)
C     GIVEN MELTING PRESSURE, P, GET TEMP., T.
      COMMON/1/GK,AL,BB,BE,GA,DE,EP, DCRT,TCRT,PCRT,DGAT,DTRP,TTRP,PTRP
      DATA (A=2559.65),(E=2.179)
    1 X = (P-PTRP)/A + 1  $  FINDTMF = TTRP*X**(1.0/E)
    2 RETURN    $    END
```

```
      FUNCTION FINDTSF(P)
C     GIVEN VAPOR PRESSURE P, ITERATE T TO MINIMIZE (P-PC).
      COMMON/1/GK,AL,BB,BE,GA,DE,EP, DCRT,TCRT,PCRT,DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
    1 FORMAT(1H0 9X *FINDTSF = 0,  FAILS TO CONVERGE. * / )
    2 FORMAT(1H0 9X *FINDTSF = 0,  P EXCEEDS PCRT. * / )
    3 IF(P-PCRT) 4,11,12
    4 T = 200  $  DO 9 J=1,50  $  DP = P - PSATF(T)  $  ADP = ABS (DP)
    5 IF(ADP/P-1.0E-6) 10,10,6
    6 IF(ADP/DPSDT/T-1.0E-6) 10,10,7
    7 T = T + DP/DPSDT  $  IF(T-TCRT) 9,9,8
    8 T = TCRT
    9 CONTINUE  $  FINDTSF = 0  $  PRINT 1  $  RETURN
   10 FINDTSF = T   $   RETURN
   11 FINDTSF = TCRT   $   RETURN
   12 FINDTSF = 0  $  PRINT 2   $   RETURN  $  END
```

Appendix D. Continued.

```
      SUBROUTINE FURTADO
C     COMPARE FURTADO CP(P,T) ON HIS 14 ISOBARS.
C     READ PRESSURES FIRST.  SEPARATE ISOBARS(CARDS) BY BLANKS.
      COMMON/1/GK,AL,BB,BE,GA,DE,EP, DCRT,TCRT,PCRT,DGAT,DTRP,TTRP,PTRP
      COMMON/7/ TA,TB,PB,RB, EA,HA,SA, EB,HB,SB
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/99/ TI,EZZ, EZ,SZ,CVZ, HZ,CPZ
      DIMENSION PF(14)
   11 FORMAT(1H1)
   12 FORMAT(1H0 16X *FURTADO ETHANE CP(P,T) AT P =* F8.3, 4H BAR /
     1 17X3HT,K 5X5HMOL/L 3X7HJ/MOL/K 5X5HCALCD 6X4HPCNT)
   13 FORMAT(I5, 3F10.0)
   14 FORMAT(10X 2F10.3, 3F10.2)
   15 FORMAT(8F10.0)
   21 READ 15, (PF(I),I=1,14)  $  PRINT 11  $  L = 0
   22 DO 50 I=1,14  $  P = PF(I)  $  PRINT 12, P  $  L = L+3
   23 DO 40 J=1,99  $  READ 13, IDD,T,PX,CPX  $  IF(IDD) 24,50
   24 CPX = 1.874335*CPX  $  L = L+1  $  IF(L.GT.55) 25,26
   25 L = 0  $  PRINT 11
   26 IF(I.EQ.1) 27,31
   27 TI = T  $  CALL IDEAL  $  CP=CPZ $ DEN=0  $  GO TO 39
   31 IF(T.LT.TB) 32,38
   32 IF(T.LT.TA) 33,34
   33 CALL LIQTHRM  $  GO TO 39
   34 IF(T.LT.TCRT) 35,37
   35 PX = PSATF(T)  $  IF(P.GT.PX) 36,38
   36 CALL THRMOX  $  GO TO 39
   37 PX = PVTF(T,DCRT,0)  $  IF(P.GT.PX) 36,38
   38 CALL THRMOGS
   39 PCT = 100.0*(1-CP/CPX)
   40 PRINT 14, T,DEN, CPX,CP, PCT
   50 CONTINUE  $  RETURN  $  END
```

```
      SUBROUTINE HOMOTRM
C     VALID ONLY AT T = INTEGER MULTIPLES OF 10 K.
C     GIVEN P,T FOR HOMOGENEOUS DOMAIN, GET DEN AND FUNCTIONS.
C     SAVE DK(T), EK(T), SK(T), CK(T) ALONG EACH ISOBAR.
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/99/ TI,EZZ, EZ,SZ,CVZ, HZ,CPZ
      DIMENSION DK(70),EK(70),SK(70),CK(70)
      DATA (Q=1.01325),(G=0.0831434)
    1 IF(IK.EQ.IN) 2,10
    2 TI = T  $  CALL IDEAL  $  J = T/10  $  DA = 0
    3 DK(J) = DEN = DB = FINDENF(T,P)  $  N = DB*20 + 10
    4 EK(J) = E = EZZ + EZ + ESUMF(N,T,DA,DB)
    5 SK(J) = S = SZ + SSUMF(1,N,T,DA,DB) - 100*G*ALOG(G*T*DB/Q)
    6 CK(J) = CV = CVZ + CSUMF(N,T,DA,DB)  $  GO TO 20
   10 J = T/10  $  DA = DK(J)
   11 DK(J) = DEN = DB = FINDENF(T,P)
   12 DX = ABS(DB-DA)  $  N = (DX+1)*5
   13 EK(J) = E = EK(J) + ESUMF(N,T,DA,DB)
   14 SK(J) = S = SK(J) + SSUMF(0,N,T,DA,DB)
   15 CK(J) = CV = CK(J) + CSUMF(N,T,DA,DB)
   20 H = E + 100*P/DB  $  PX = PVTF(T,DB,1)
   21 CP = CV + 100*T/DPDD*(DPDT/DB)**2
   22 W = SQRT(WK*CP*DPDD/CV)  $  RETURN  $  END
```

```
      SUBROUTINE IDEAL
C     ETHANE IDEAL GAS (1 ATM) THERMOFUNCTIONS (CHAO, 1973).
C     EQN.,  Y = (EZ-EZZ)/RT = 3 + F(X),  X = T/100,  Q = X**1/3,
C     F(X) = A1*Q4 + A2*Q5 + A3*Q6 + . . . + AN*Q**(N+3).
C     (HZ-HZZ)/RT = 1 + Y,  CVN = CVZ/R = D(EZ/R)/DT,  CPZ/R = 1 + CVZ/R,
C     SZ/R = AZ + INTEGRAL(CVZ/R/X + 1/X)*DX.
      COMMON/99/TI, EZZ, EZ,SZ,CVZ, HZ,CPZ
      DIMENSION A(9)
      DATA (R=8.3143),(AZ=21.705718)
      DATA(A = 65.498641, -362.0115914, 853.3408616, -1123.601622,
     1 906.2184427, -459.2302545, 143.0300226, -25.07495605,1.897540044)
     1 X = TI/100  $  Q = CUBERT (X)  $  DQDX = Q/3/X  $  F = F1 = S = 0
     2 DO 4 J=1,9  $  K = J+3  $  L = J+6
     3 Y = A(J)*Q**K  $  F = F + Y  $  F1 = F1 + K*Y/Q
     4 S = S + L*Y/K  $  S = AZ + S + 4*ALOG(X)
     5 Y = 3 + F  $  CV = Y + X*F1*DQDX
C     CONVERT TO DIMENSIONED RESULTS, JOULES, MOLES, KELVINS.
     6 EZ = R*TI*Y  $  HZ = R*TI*(1+Y)  $  CPZ = R*(1+CV)
     9 SZ = R*S  $  CVZ = R*CV  $  RETURN  $  END
```

```
      SUBROUTINE ISOTHRM
C     PRINTOUT THE CRITICAL ISOTHERM.
      COMMON/1/GK,AL,BB,BE,GA,DE,EP, DCRT,TCRT,PCRT,DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/4/ XB1,XB2, XC1,XC2, XE1,XE2, DXBDR,DXCDR,DXEDR
      COMMON/6/ TSAT, THETA, PSAT
    1 FORMAT(1H1 14X *THE CRITICAL ISOTHERM* //
     1 6X4HTC =F7.2, 6H, DC =F5.2, 6H, PC =F11.7,
     2 *. AT THE C.P., DPS/DT =* F8.5, 9H, DP/DT =F8.5//
     3 6X4HD/DC 9X5HTS/TC 9X5HPS/PC 10X4HP/PC 9X5HDP/DR 4X6HDTS/DR
     4 4X6HDTH/DR 4X6HDPS/DR 4X6HDXB/DR 4X6HDXC/DR )
    2 FORMAT(2X F8.2, 3F14.10, F14.9, 5F10.5)
    3 PC = PVTF(TCRT,DCRT,0)  $  DXCDR = 0
    4 PRINT 1, TCRT,DCRT,PCRT, DPSDT,DPDT  $  DO 8 J=1,51
    5 DR = 0.74 + 0.01*J  $  DN = DR*DCRT
    6 PR = PVTF(TCRT,DN,1)/PCRT  $  DPSDR = DPSDT*DTSDR
    7 TSN = TSAT/TCRT  $  PSN = PSAT/PCRT
    8 PRINT 2, DR, TSN,PSN, PR,DPDR, DTSDR,DTHDR,DPSDR,
     1 DXBDR, DXEDR
    9 RETURN  $  END
```

```
      SUBROUTINE JTLOCUS
C     DERIVE THE J-T INVERSION CURVE.  USE ROUTINE DELTAF(T,DI).
      DIMENSION TT(99),PP(99),DN(99)
      DATA (DCRT=6.80),(TCRT=305.33)
    1 FORMAT(1H1 16X *THE JOULE-THOMSON INVERSION LOCUS FOR  ETHANE*//
     1 17X3HT,K 5X5HP,BAR 5X5HMOL/L  7X3HT,K 5X5HP,BAR 5X5HMOL/L)
    2 FORMAT(10X I10, F10.1, F10.2,  I10, F10.1, F10.2)
    6 TA = 240  $  NP = 72
    7 PRINT 1  $  DO 25 I=1,NP  $  DX = 1.6
    8 T = TA + 5*I  $  X = T/TCRT
    9 DI = DCRT*(2.40 - 0.58*X + 0.24/X)
   10 IF(T-TCRT) 11,12,12
   11 DL = DENLIQF(T)  $  IF(DI-DL) 25,12,12
   12 SS = DELTAF(T,DI)  $  DO 20 IT=1,15
   14 D=DI-DX $ SL=DELTAF(T,D)   $   D=DI+DX $ SP=DELTAF(T,D)
   15 IF(SS-SL) 18,16,16
   16 IF(SP-SL) 19,17,17
   17 SS = SL  $  DI = DI - DX  $  GO TO 20
   18 IF(SS-SP) 20,20,19
   19 SS = SP  $  DI = DI + DX
   20 DX = DX/2
   23 TT(I) = T  $  DN(I) = DI  $  PP(I) = PVTF(T,DI,0)
   25 CONTINUE  $  N = NP/2  $  DO 29 J=1,N
   26 IT = TT(J)  $  ITT = TT(J+N)
   29 PRINT 2, IT,PP(J),DN(J), ITT,PP(J+N),DN(J+N)
   30 RETURN    $    END
```

```
      SUBROUTINE LIQTHRM
C     FOR DEN ≥ RB=14.5 MOL/L, AND T ≤ TA=256.562 K.
C     GIVEN P,T, GET DEN AND ALL FUNCTIONS.
C     START ON SATD.LIQ., THEN INTEGRATE ALONG ISOTHERM T.
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/5/ DDSDT
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
    1 E = ESATF(T)  $  S = SSATF(T)  $  DA = DENLIQF(T)
    2 DDLDT = DDSDT  $  DEN = DB = FINDENF(T,P)
    3 PX = PVTF(T,DA,0)  $  CV = CSATXF(T) + 100*T*DPDT*DDLDT/DA/DA
    4 DX = ABS(DB-DA)  $  N = (DX+1)*5  $ .E = E + ESUMF(N,T,DA,DB)
    5 H = E + 100*P/DB  $  S = S + SSUMF(0,N,T,DA,DB)
    6 CV = CV + CSUMF(N,T,DA,DB)  $  PX = PVTF(T,DB,1)
    7 CP = CV + 100*T/DPDD*(DPDT/DB)**2
    8 W = SQRT(WK*CP*DPDD/CV)   $   RETURN  $  END
```

```
      SUBROUTINE PEEK
C     EXAMINE BEHAVIOR OF THE COEFFICIENTS.
C     B(S) ≡ B1 + B2*S + B3*S2,   E(S) ≡ SN*SR*(E1 + E2*S + E3*S2).
      COMMON B1,B2,B3, C1,C2,C3, E1,E2,E3, ER
      COMMON/1/GK,AL,BB,BE,GA,DE,EP, DCRT,TCRT,PCRT,DGAT,DTRP,TTRP,PTRP
      COMMON/6/ TSAT, THETA, PSAT
    4 FORMAT(1H1 14X *EQUATION OF STATE, COEFFICIENTS* //
     1 15X 6HDTRP =F8.4, 8H, TTRP =F8.3, 8H, PTRP =E16.9/
     2 15X 6HDCRT =F8.4, 8H, TCRT =F8.3, 8H, PCRT =F13.9//
     3 15X 4HAL =F5.2, 6H, BB =F5.2, 6H, BE =F5.2/
```

```
     4 15X 4HGA =F5.2, 6H, DE =F5.2, 6H, EP =F5.2//
     5 2(13X 3F16.11/) )
    5 FORMAT(15X 5HMOL/L 6X4HTSAT 5X5HTHETA 6X4HPSAT 9X1HB 9X1HC )
    6 FORMAT(10X F10.1, 5F10.3)
   70 PRINT 4, DTRP,TTRP,PTRP, DCRT,TCRT,PCRT, AL,BB,BE, GA,DE,EP,
     1 B1,B2,B3, E1,E2,E3
   71 PRINT 5  $  DO 77 J=1,44  $  DN = 0.5*J  $  R = S = DN/DCRT
   72 R2 = R*R  $  SN = S-1  $  SR = S-ER  $  C = 0
   73 B = B1 + B2*R + B3*R2   $   E = SN*SR*(E1 + E2*R + E3*R2)
   76 TS=TSAT=TSATF(DN) $ TH=THETAF(DN) $ PS=PSATF(TS)
   77 PRINT 6, DN, TS,TH,PS, B,E      $    RETURN  $  END
```

```
      FUNCTION PMELTF(T)
C    ETHANE MELTING LINE, BAR.   STRATY/TSUMURA, 1975.
C    SIMON EQN.,  P = PTRP + A*(X**E-1),  X = T/TTRP.
      COMMON/1/GK,AL,BB,BE,GA,DE,EP, DCRT,TCRT,PCRT,DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      DATA (A=2559.65),(E=2.179)
    1 X = T/TTRP  $  XE = X**E   $   PMELTF = PTRP + A*(XE-1)
    3 DPMDT = A*E*XE/X/TTRP   $   RETURN  $  END
```

```
      FUNCTION PSATF(T)
C    NEW ETHANE VAPOR PRESSURE EQUATION, FALL OF 1975.   P IN BAR.
C    EQN.,  LN(P/PT) = P1*X + P2*U + P3*U2 + P4*U3 + P5*U*(1-U)**E.
C    ARGS.,  U ≡ (T-TT)/(TC-TT),   X ≡ (1-TT/T)/(1-TT/TC).
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      DATA (TTRP=90.348),(TCRT=305.33)
      DATA (EPP=1.3),(PTRP=1.130842618E-5)
      DATA (P1=18.8452282876),(P2=-7.6354151345),
     1 (P3=5.4284431006),(P4=-1.3623270362),(P5=0.7692492586)
    1 FORMAT(1H0 9X *PSATF = 0, T EXCEEDS TCRT. * / )
    2 UN = TCRT-TTRP  $  XN = 1 - TTRP/TCRT
    3 U = (T-TTRP)/UN  $  X = (1-TTRP/T)/XN
    4 U1T = 1.0/UN  $  X1T = TTRP/XN/T/T  $  U2 = U*U  $  U3 = U*U2
    6 V = 1-U  $  IF(V) 7,8,9
    7 PRINT 1   $   STOP
    8 Z = Z1 = 0   $   GO TO 10
    9 W = V**EPP  $  W1 = -EPP*W/V  $  Z = U*W  $  Z1 = U*W1 + W
   10 F = P1*X + P2*U + P3*U2 + P4*U3 + P5*Z
   11 F1T = P1*X1T + (P2 + 2*P3*U + 3*P4*U2 + P5*Z1)*U1T
   12 PSATF = PTRP*EXP(F)  $  DPSDT = F1T*PSATF  $  RETURN  $  END
```

Appendix D. Continued.

```
      FUNCTION PVTF(T,D,M)
C     PVTF = P,BAR. M=0 YIELDS DP/DT,D2P/DT2. M=1 YIELDS ALSO DP/DD.
C     NOTE,  R = S = DEN/DCRT,  AND  GK = 0.0831434*DCRT,BAR/K.
C     EQNSTATE,  P-PSAT = S*GK*(T-TSAT) + S*S*GK*TCRT*F(R,T),  WHERE -
C     F(R,T) = B(S)*XBF(R,T)  +  E(S)*XEF(R,T),   AND -
C     B(S) = B1 + B2*R + B3*R2,   E(S) = SN*SR*(E1 + E2*R + E3*R2).
      COMMON B1,B2,B3, C1,C2,C3, E1,E2,E3, ER
      COMMON/1/GK,AL,BB,BE,GA,DE,EP, DCRT,TCRT,PCRT,DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/4/ XB1,XB2, XC1,XC2, XE1,XE2, DXBDR,DXCDR,DXEDR
      COMMON/6/ TSAT, THETA, PSAT
    1 R=S=D/DCRT $ R2=R*R $ R3=R*R2 $ SN = S-1  $  SR = S-ER
    2 TC = TCRT  $  RG = R*GK  $  GKT = GK*TC  $  DSDR = DTRP/DCRT
    3 TS=TSAT=TSATF(D)  $  PS=PSAT=PSATF(TS)  $  THETA=THETAF(D)
    4 XB = XBF(T,D)   $   XE = XEF(T,D)
    5 B = B1*R2 + B2*R3 + B3*R*R3   $   SM = SN*R2*SR
    6 ESM = E1 + E2*R + E3*R2   $   E = ESM*SM
   10 F = B*XB + E*XE   $   F1 = B*XB1 + E*XE1
   11 F2 = B*XB2 + E*XE2   $   PVTF = PS + RG*(T-TS) + GKT*F
   14 DPDT = RG + GK*F1  $  D2PDT2 = GK*F2/TC   $   IF(M) 15,30
   15 BD = (2*B1*R + 3*B2*R2 + 4*B3*R3)*DSDR
   16 ES1 = E2 + 2*E3*R   $   SM1 = SN*R2 + (3*R2 - 2*R)*SR
   17 ED = (ESM*SM1 + ES1*SM)*DSDR
   20 F1 = B*DXBDR + BD*XB   +   E*DXEDR + ED*XE
   26 DPDR = (DPSDT-RG)*DTSDR + (T-TS)*GK*DSDR + GKT*F1
   27 DPDD = DPDR/DTRP
   30 RETURN   $   END
```

```
      FUNCTION QVAPXF(T)
C     VIA PROGRAM QVAP-3, 2/9/76,  USING DATA OF -
C     DOUSLIN, RIEDEL, FURTADO.  FOR 49 POINTS, RMS = 0.56 PCT.
C     DEFINE X = (TC-T)/(TC-TT),   U = X**1/3,  WHEN EQN. IS -
C     QV = A1*U + A2*U2 + . . . + A6*U6.
      DIMENSION A(6)
      DATA (TT = 90.348),(TC = 305.33)
      DATA(A = 12.857784, 5.4095302, 33.835851,
     1 -97.520486, 100.84976, -37.933878)
    1 U = CUBERT ((TC-T)/(TC-TT))  $  Q = 0  $  DO 2 K=1,6
    2 Q = Q + A(K)*U**K   $   QVAPXF = 1000*Q   $   RETURN  $  END
```

```
      SUBROUTINE SATGSTR
C     GIVEN P,T AT SATURATION, GET DEN ETC. -
      COMMON/1/GK,AL,BB,BE,GA,DE,EP, DCRT,TCRT,PCRT,DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/99/ TI,EZZ, EZ,SZ,CVZ, HZ,CPZ
      DATA (DA=0.0),(Q=1.01325),(G=0.0831434)
   20 FORMAT(1H0 9X *T EXCEEDS TCRT IN SATGSTR.* / )
    1 TI = T  $  CALL IDEAL  $  DEN = DB = DENGASF(T)
    2 N = DB*20 + 10
    3 E = EZZ + EZ + ESUMF(N,T,DA,DB)  $  H = E + 100*P/DB
    4 S = SZ + SSUMF(1,N,T,DA,DB) - 100*G*ALOG(G*T*DB/Q)
    5 IF(T-TCRT) 9,6,12
    6 CP = CV = W = 0  $  RETURN
    9 CV = CVZ + CSUMF(N,T,DA,DB)  $  PX = PVTF(T,DB,1)
   10 CP = CV + 100*T/DPDD*(DPDT/DB)**2
   11 W = SQRT(WK*CP*DPDD/CV)  $  RETURN
   12 PRINT 20  $  STOP  $  END
```

```
      SUBROUTINE SATLQTR
C     GIVEN P,T FOR SAT.LIQ., GET DEN AND ALL FUNCTIONS AT T ≤ TA.
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/5/ DDSDT
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
    1 E = ESATF(T)  $  S = SSATF(T)  $  CSAT = CSATXF(T)
    2 DEN = DENLIQF(T)  $  DDLDT = DDSDT  $  H = E + 100*P/DEN
    3 PX = PVTF(T,DEN,1)  $  CV = CSAT + 100*T*DPDT*DDLDT/DEN/DEN
    4 CP = CV + 100*T/DPDD*(DPDT/DEN)**2
    6 W = SQRT(WK*CP*DPDD/CV)  $  RETURN  $  END
```

```
      FUNCTION SSATF(T)
C     START WITH S = SA AT TA = 256.562 K,  THEN -
C     USE INTEGRAL FORM OF RODER CSATXF(T). GET CHANGE FROM TA DOWN TO T.
      COMMON/7/ TA,TB,PB,RB, EA,HA,SA, EB,HB,SB
      COMMON/9/ AU,BU,CU,DU, AS,BS,CS,DS,ES, ETB,STB,STA
    1 F = (305.33-T)**0.4
    3 STT = AS*ALOG(T) + BS*T - CS*F/0.4 - DS/T - ES/2/T/T
    4 SSATF = SA + STT - STA  $  RETURN  $  END
```

```
      FUNCTION SSUMF(L,N,T,DA,DB)
C     DENSITY-DEPENDENT CHANGE OF S FROM DA TO DB.
C     DELTA S  =  INTEGRAL(GK-(DP/DT)/DN)*DX/DN.
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      DATA (GC = 0.0831434)
    1 SSUMF = 0  $  DX = (DB-DA)/N  $  IF(L.EQ.0) 4,2
    2 DO 3 J=1,N  $  DN = DA + (J-0.5)*DX  $  P = PVTF(T,DN,0)
    3 SSUMF = SSUMF + (GC-DPDT/DN)*DX/DN  $  GO TO 9
    4 DO 5 J=1,N  $  DN = DA + (J-0.5)*DX  $  P = PVTF(T,DN,0)
    5 SSUMF = SSUMF - DPDT*DX/DN/DN
    9 SSUMF = 100*SSUMF  $  RETURN  $  END
```

```
      SUBROUTINE TABLIQ
C     TABULATE THE ETHANE SATURATED LIQUID FUNCTIONS.
      COMMON/1/GK,AL,BB,BE,GA,DE,EP, DCRT,TCRT,PCRT,DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/5/ DDSDT
      COMMON/7/ TA,TB,PB,RB, EA,HA,SA, EB,HB,SB
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      DIMENSION TSA(46), PSA(46)
    4 FORMAT(1H1 13X *PROPERTIES OF SATURATED LIQUID ETHANE* //
     1 14X1HT 10X1HP 5X3HDEN 4X5HV,LIQ 6X5HV,GAS 5X6HDPS/DT 3X6HDDL/DT
     2 4X5HDP/DT 6X5HDP/DD 2X5HQ,VAP 2X5HQ,XPT /
     3 10X5HDEG K 8X3HBAR 3X5HMOL/L 4X5HL/MOL 6X5HL/MOL 6X5HBAR/K
     4 2X7HMOL/L/K 4X5HBAR/K 2X9HBAR-L/MOL 2X5HJ/MOL 2X5HJ/MOL )
    5 FORMAT(5XF10.3, E11.4, F8.3, F9.5, E11.4, E11.3, 2F9.4,E11.3,2I7)
   11 FORMAT(1H1 13X *PROPERTIES OF SATURATED LIQUID ETHANE* //
     1 14X1HT 11X1HP 9X1HE 9X1HH 9X1HS
     2 6X2HCV 6X2HCS 6X2HCP 6X1HW 4X6HCS,XPT /
     3 10X5HDEG K 9X3HBAR 5X5HJ/MOL 5X5HJ/MOL 3X7HJ/MOL/K
     4 1X7HJ/MOL/K 1X7HJ/MOL/K 1X7HJ/MOL/K 2X5HM/SEC 3X7HJ/MOL/K )
   12 FORMAT(5X F10.3, E12.4, 2F10.1, F10.3, 3F8.2, I7, F10.2)
C     FOR PAGE ONE OF TABLIQ.
  140 PRINT 4  $  NP = 45
  141 DO 151 J=1,NP  $  IF(J.EQ.1) 142,143
  142 T = TTRP  $  GO TO 147
  143 IF(J.EQ.NP) 144,146
  144 T = TCRT  $  DG = DL = DCRT  $  DDLDT = 0
  145 VG = VL = 1/DG  $  GO TO 149
  146 T = 85 + 5*J
  147 DL = DENLIQF(T)  $  DDLDT = DDSDT
  148 DG = DENGASF(T)  $  VG = 1/DG  $  VL = 1/DL
  149 TSA(J) = T  $  PSA(J) = PS = PSATF(T)
  150 IQC = 100*T*DPSDT*(VG-VL)  $  IQX = QVAPXF(T)  $  PX=PVTF(T,DL,1)
  151 PRINT 5, T,PS,DL, VL,VG, DPSDT,DDLDT, DPDT,DPDD, IQC,IQX
C     FOR PAGE TWO OF TABLIQ.
C     USE SATLQTR AT T < TA,  USE THRMXL AT T > TA.
  160 PRINT 11  $  DO 165 J=1,NP
  161 P=PSA(J) $ T=TSA(J) $ CSX = CSATXF(T)  $  IF(T.LT.TA) 162,163
  162 CALL SATLQTR  $  IW = W  $  GO TO 165
  163 CALL THRMXL  $  IW = W
  165 PRINT 12, T,P, E,H,S, CV,CSAT,CP, IW, CSX
  999 RETURN  $  END
```

```
      SUBROUTINE TERRES
C     COMPARE SOUND VELOCITIES IN HOMOGENEOUS DOMAIN.
C     ID = (3)TERRES ET AL., BRENNSTOFF CHEMIE 38, 129 (1957).
      COMMON/1/GK,AL,BB,BE,GA,DE,EP, DCRT,TCRT,PCRT,DGAT,DTRP,TTRP,PTRP
      COMMON/7/ TA,TB,PB,RB, EA,HA,SA, EB,HB,SB
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
    1 FORMAT(I5, 3F10.0)
    2 FORMAT(1H1 7X *TERRES ETHANE SPEED OF SOUND, METERS/SEC. * //
     1 8X 2HID 7X3HT,K 5X5HP,BAR 5X5HMOL/L 5X5HW,XPT 5X5HCALCD 4X4HPCNT)
    3 FORMAT(5X I5, 3F10.3, 2F10.1, F8.2)
    6 PRINT 2  $  N = 0  $  DO 20 J=1,300
    7 READ 1, ID, TC,PK, WX  $  IF(ID) 8,30
    8 N = N+1  $  IF(N.GT.46) 9,10
    9 N = 0  $  PRINT 2
   10 T = 273.15 + TC  $  P = 0.980665*PK
   11 IF(T.LT.TB) 12,18
   12 IF(T.LT.TA) 13,14
   13 CALL LIQTHRM  $  GO TO 19
   14 IF(T.LT.TCRT) 15,17
   15 PX = PSATF(T)  $  IF(P.GT.PX) 16,18
   16 CALL THRMOX  $  GO TO 19
   17 PX = PVTF(T,DCRT,0)  $  IF(P.GT.PX) 16,18
   18 CALL THRMOGS
   19 PCT = 100.0*(1-W/WX)
   20 PRINT 3, ID, T,P,DEN, WX,W, PCT
   30 RETURN  $  END
```

```
      FUNCTION THETAF(DEN)
C     THETA = TSAT*EXP(U(S)).
C     LET Q = (S-1)/(ST-1),  WHERE ST = DTRP/DCRT,  THEN -
C     IF S < 1, U = AL*Q**3,    IF S > 1,  U = -AL*Q**3,
C     YIELDS ALSO THE FIRST DERIVATIVE RSP. TO RHO ≡ DEN/DTRP.
      COMMON/1/GK,AL,BB,BE,GA,DE,EP, DCRT,TCRT,PCRT,DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/6/ TSAT, THETA, PSAT
    1 S = DEN/DCRT  $  DSDR = DTRP/DCRT  $  C = DSDR-1
    2 Q = (S-1)/C  $  Q2 = Q*Q  $  U = AL*Q*Q2
    3 U1 = 3*AL*Q2*DSDR/C  $  IF(Q) 5,9,4
    4 U = -U  $  U1 = -U1
    5 XP = EXP (U)  $  THETAF = TSAT*XP
    6 DTHDR = (TSAT*U1 + DTSDR)*XP  $  RETURN
    9 THETAF = TCRT  $  DTHDR = 0  $  RETURN  $  END
```

```
      SUBROUTINE THRMOGS
C     GIVEN P,T FOR HOMOGENEOUS DOMAIN, GET DEN AND FUNCTIONS.
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/99/ TI,EZZ, EZ,SZ,CVZ, HZ,CPZ
      DATA (DA=0.0),(Q=1.01325),(G=0.0831434)
    1 TI = T  $  CALL IDEAL  $  DEN = DB = FINDENF(T,P)
    2 N = DB*20 + 10
    3 E = EZZ + EZ + ESUMF(N,T,DA,DB)  $  H = E + 100*P/DB
    4 S = SZ + SSUMF(1,N,T,DA,DB) - 100*G*ALOG(G*T*DB/Q)
    7 CV = CVZ + CSUMF(N,T,DA,DB)  $  PX = PVTF(T,DB,1)
    8 CP = CV + 100*T/DPDD*(DPDT/DB)**2
    9 W = SQRT(WK*CP*DPDD/CV)   $   RETURN  $  END
```

```
      SUBROUTINE THRMOX
C     REGION X AT DEN > DCRT, TA < T ≤ TB.
C     GIVEN P,T, GET DEN AND ALL FUNCTIONS.
C     START WITH VALUES FROM CVSUMIT, THEN INTEGRATE ALONG ISOTHERM T.
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
    1 CALL CVSUMIT  $  DA = DEN  $  DEN = DB = FINDENF(T,P)
    2 DX = ABS(DB-DA)  $  N = (DX+1)*5
    3 E = E + ESUMF(N,T,DA,DB)  $  H = E + 100*P/DB
    4 S = S + SSUMF(0,N,T,DA,DB)
    5 CV = CV + CSUMF(N,T,DA,DB)  $  PX = PVTF(T,DB,1)
    6 CP = CV + 100*T/DPDD*(DPDT/DB)**2
    7 W = SQRT(WK*CP*DPDD/CV)   $   RETURN  $  END
```

```
      SUBROUTINE THRMXL
C     GIVEN P,T FOR SAT.LIQ. IN REGION X, GET DEN AND FUNCTIONS.
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/5/ DDSDT
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      DATA (TCRT = 305.33)
    1 CALL CVSUMIT  $  DA = DEN  $  DEN = DB = DENLIQF(T)
    2 DX = ABS(DB-DA)  $  N = (DX+1)*5
    3 E = E + ESUMF(N,T,DA,DB)  $  H = E + 100*P/DB
    4 S = S + SSUMF(0,N,T,DA,DB)  $  IF(T.LT.TCRT) 7,6
    6 CSAT = CV = CP = W = 0   $   RETURN
    7 CV = CV + CSUMF(N,T,DA,DB)  $  PX = PVTF(T,DB,1)
    8 CP = CV + 100*T/DPDD*(DPDT/DB)**2
    9 CSAT = CV - 100*T*DPDT*DDSDT/DEN/DEN
   10 W = SQRT(WK*CP*DPDD/CV)   $   RETURN  $  END
```

```
      FUNCTION TSATF(DEN)
C     ITERATE T TO MINIMIZE (DEN-DCALC) VIA DENGASF(T), DENLIQF(T).
      COMMON/1/GK,AL,BB,BE,GA,DE,EP, DCRT,TCRT,PCRT,DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/5/ DDSDT
      DATA (Q=1.5),(FN=3.48168907)
C     NOTE,   FN = EXP(Q) - 1.0.
    1 FORMAT(1H0 9X *TSATF FAILS TO CONVERGE. * / )
    2 D=DEN $ S=D/DCRT $ YN=TCRT/TTRP-1  $  IF(DEN-DCRT) 3,30,4
    3 ST=DGAT/DCRT $ F=ALOG(S)/ALOG(ST)*((1-S)/(1-ST))**2  $  GO TO 5
    4 ST=DTRP/DCRT $ U=((S-1)/(ST-1))**3 $ F=(EXP(Q*U)-1)/FN
    5 T = TCRT/(1 + YN*F)
    6 DO 15 J=1,50  $  IF(DEN-DCRT) 7,30,8
    7 DD = D - DENGASF(T)   $   GO TO 9
    8 DD = D - DENLIQF(T)
    9 IF(ABS(DD/D).LT.1.0E-7) 16,10
   10 DT = DD/DDSDT   $   IF(ABS(DT/T).LT.1.0E-7) 16,11
   11 T = T + DT   $   IF(T) 12,12,13
   12 T = TTRP   $   GO TO 15
   13 IF(T.LT.TCRT) 15,14
   14 T = TCRT - 0.10
   15 CONTINUE   $   PRINT 1   $   STOP
   16 TSATF = T   $   DTSDR = DTRP/DDSDT   $   RETURN
   30 TSATF = TCRT   $   DTSDR = 0   $   RETURN  $  END
```

```
      SUBROUTINE TSUMURA
C     COMPARE SOUND VELOCITIES IN SINGLE PHASES.
C     ID., (9)TSUMURA (NBS, FEB., 1976).
      COMMON/1/GK,AL,BB,BE,GA,DE,EP, DCRT,TCRT,PCRT,DGAT,DTRP,TTRP,PTRP
      COMMON/7/ TA,TB,PB,RB, EA,HA,SA, EB,HB,SB
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
    1 FORMAT(I5, 3F10.0)
    2 FORMAT(1H1 7X *TSUMURA ETHANE SPEED OF SOUND, METERS/SEC. * //
     1 8X 2HID 7X3HT,K 5X5HP,BAR 5X5HMOL/L 5X5HW,XPT 5X5HCALCD 4X4HPCNT)
    3 FORMAT(5X I5, 3F10.3, 2F10.1, F8.2)
    6 PRINT 2  $  N = 0  $  DO 20 J=1,300
    7 READ 1, ID, T,P, WX  $  IF(ID) 8,30
    8 N = N+1  $  IF(N.GT.54) 9,11
    9 N = 0  $  PRINT 2
   11 IF(T.LT.TB) 12,18
   12 IF(T.LT.TA) 13,14
   13 CALL LIQTHRM  $  GO TO 19
   14 IF(T.LT.TCRT) 15,17
   15 PX = PSATF(T)  $  IF(P.GT.PX) 16,18
   16 CALL THRMOX  $  GO TO 19
   17 PX = PVTF(T,DCRT,0)  $  IF(P.GT.PX) 16,18
   18 CALL THRMOGS
   19 PCT = 100.0*(1-W/WX)
   20 PRINT 3, ID, T,P,DEN, WX,W, PCT
   30 RETURN   $   END
```

```
      SUBROUTINE WSATLIQ
C     ID., (1)POOLE/AZIZ, (2)VAN GEEL, (3)TSUMURA.
      COMMON/7/ TA,TB,PB,RB, EA,HA,SA, EB,HB,SB
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
    1 FORMAT(I5, 2F10.0)
    6 FORMAT(1H1 7X *SPEED OF SOUND, SAT.LIQ. ETHANE, METERS/SEC. * /
     1 8X *(1)POOLE/AZIZ, (2)VAN GEEL, (3)TSUMURA. * //
     1 8X 2HID 7X3HT,K 5X5HP,BAR 5X5HMOL/L 5X5HW,XPT 5X5HCALCD 4X4HPCNT)
    7 FORMAT(5X I5, 3F10.3, 2F10.1, F8.2)
   10 PRINT 6  $  L = 0  $  DO 20 J=1,300
   11 READ 1, ID, T, WX  $  IF(ID) 12,30
   12 L = L+1  $  IF(L.GT.40) 13,14
   13 L = 0  $  PRINT 6
   14 P = PSATF(T)  $  IF(T.GT.TA) 15,16
   15 CALL THRMXL  $  GO TO 17
   16 CALL SATLQTR
   17 PCT = 100.0*(1-W/WX)
   20 PRINT 7, ID, T,P,DEN, WX,W,PCT
   30 RETURN  $  END
```

```
      FUNCTION XBF(T,D)
C     XBF = SQRT(T/TC)*LN(T/TS) = Q(T)*Z(R,T),
C     Z(R,T) = LN(U),  U(R,T) = T/TS(R).
      COMMON/1/GK,AL,BB,BE,GA,DE,EP, DCRT,TCRT,PCRT,DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/4/ XB1,XB2, XC1,XC2, XE1,XE2, DXBDR,DXCDR,DXEDR
      COMMON/6/ TSAT, THETA, PSAT
    1 TC = TCRT  $  TS = TSAT  $  X = T/TC
    2 U = T/TS  $  U1X = TC/TS  $  U1R = -U*DTSDR/TS
    3 Z = ALOG(U)  $  Z1R=U1R/U  $  Z1X=U1X/U  $  Z2X=-Z1X*Z1X
    4 Q = SQRT (X)  $  Q1 = 0.5/Q  $  Q2 = -Q1/2/X
    5 XBF = Q*Z  $  DXBDR = Q*Z1R  $  XB1 = Q*Z1X + Q1*Z
    6 XB2 = Q*Z2X + 2*Q1*Z1X + Q2*Z  $  RETURN  $  END
```

Appendix D. Continued.

```
      FUNCTION XEF(T,D)
C     XEF ≡ PSI - PSISAT,    DEFINE W ≡ (1-TH/T),  WHEN -
C     PSI ≡ DE/X + (1-DE)*(1 - W + W*LN(W)),    0 ≤ DE ≤ 1.
      COMMON/1/GK,AL,BB,BE,GA,DE,EP, DCRT,TCRT,PCRT,DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/4/ XB1,XB2, XC1,XC2, XE1,XE2, DXBDR,DXCDR,DXEDR
      COMMON/6/ TSAT, THETA, PSAT
    1 IF(D.EQ.DCRT) 15,2
    2 A = DE  $  B = 1-A  $  TC = TCRT  $  TH = THETA  $  TS = TSAT
    3 X = T/TC  $  X2 = X*X  $  XS = TS/TC  $  XS1 = DTSDR/TC
    4 W = 1.0 - TH/T  $  IF(W) 15,15,5
    5 W1R = -DTHDR/T  $  W1X = TH/T/X  $  W2X = -2*W1X/X
    6 G = ALOG(W)  $  U = W*G - W + 1  $  U1R = G*W1R
    7 U1X = G*W1X  $  U2X = G*W2X + W1X*W1X/W
    8 P = A/X + B*U  $  P1R = B*U1R
    9 XE1 = -A/X2 + B*U1X  $  XE2 = 2*A/X/X2 + B*U2X
   10 WS = 1.0 - TH/TS  $  IF(WS) 15,15,11
   11 GS = ALOG(WS)  $  US = WS*GS - WS + 1
   12 US1 = (TH*DTSDR/TS - DTHDR)*GS/TS
   13 PS = A/XS + B*US  $  PS1 = -A*XS1/XS/XS + B*US1
   14 XEF = P - PS  $  DXEDR = P1R - PS1  $  RETURN
   15 XEF = XE1 = XE2 = DXEDR = 0  $  RETURN  $  END
```

```
      SUBROUTINE FITTER
      COMMON/999/ NCOF,Y,G(30)
      DIMENSION A(30,31),B(30,31)
      TYPE DOUBLE SY,SYY,RES,A,B
      EQUIVALENCE (A,B)
      DATA (NTR=-1),(NDIM=30)
   37 FORMAT(*1THE COEFFICIENTS AND THEIR ESTIMATED ERRORS ARE:*//)
   38 FORMAT(*0*/*0*/*0ESTIMATED RESIDUAL SUM OF SQUARES =*E17.9/
     1                * ESTIMATED REGRESSION SUM OF SQUARES =*E17.9/
     2                     * ESTIMATED TOTAL SUM OF SQUARES =*E17.9/
     3* VARIANCE OF FIT =*E17.9/* DETERMINANT OF THE MATRIX =*E17.9/
     4* CORRELATION COEFFICIENT =*E17.9/* NUMBER OF POINTS =*I5)
   45 FORMAT(*1THE ARRAYS IN THE FITTING PROGRAM ARE TOO SMALL TO HOLD T
     1HE NUMBER OF CONSTRAINTS AND FUNCTIONS ASKED FOR IN THE CALLING PR
     2OGRAM*)
  371 FORMAT(E19.10,* +OR-*E9.2)
C     ENTER HERE TO FIT THE DATA
      ENTRY FIT
      IF(NTR) 1,3,3
    1 NP=0
      NF=NCOF
      IF(NF.GT.NDIM) GO TO 44
      NCON=0
      SY=0.
      SYY=0.
      NY=NF+1
      DO 2 I=1,NY
      DO 2 J=1,NF
    2 A(J,I)=0.
      IF(NTR.EQ.0) GO TO 11
      NTR=0
    3 SY=Y+SY
      SYY=SYY+Y*Y
      DO 4 J=1,NF
      A(J,NY)=A(J,NY)+Y*G(J)
      DO 4 I=1,NF
    4 A(I,J)=A(I,J)+G(I)*G(J)
      NP=NP+1
      RETURN
C     ENTER HERE TO CONSTRAIN THE EQUATION
      ENTRY CONSTR
      IF(NTR) 10,11,11
   10 NTR=0
      GO TO 1
   11 N=NY-1
      IF((NY+NCON+2).GT.NDIM) GO TO 44
      DO 12 I=1,N
      A(I,NY+1)=A(I,NY)
      A(NDIM-NCON,I)=G(I)
      A(NY,I)=G(I)
   12 A(I,NY)=G(I)
      NCON=NCON+1
      DO 13 I=NF,N
      A(NY,I+1)=0.0
   13 A(I+1,NY)=0.0
      NY=NY+1
      A(NY-1,NY)=Y
```

Appendix D. Continued.

```
      RETURN
C     ENTER HERE TO INVERT MATRIX AND GET COEFFICIENTS
      ENTRY COEFF
      N=NY-1
      DO 20 I=1,NF
   20 G(I)=A(I,NY)
      DO 22 I=2,N
      DO 21 J=I,NY
   21 A(I-1,J)=A(I-1,J)/A(I-1,I-1)
      DO 22 J=I,N
      DO 22 K=I,NY
   22 A(J,K)=A(J,K)-A(J,I-1)*A(I-1,K)
      A(N,NY)=A(N,NY)/A(N,N)
      DO 24 I=2,N
      L=N-I+2
      DO 24 J=L,N
   24 A(L-1,NY)=A(L-1,NY)-A(L-1,J)*A(J,NY)
      RES=SYY
      DO 25 I=1,NF
      RES=RES-A(I,NY)*G(I)
   25 G(I)=A(I,NY)
      DF=NP-NF+NCON
      Y=NCON
      NTR=-1
      RETURN
C     ENTER HERE FOR STATISTICS OF COEFFICIENTS
      ENTRY STAT
      DO 27 I=1,NCON
      DO 27 J=1,NF
   27 RES=RES-A(NDIM-I+1,J)*A(J,NY)*A(NF+I,NY)
      TOT=SYY-SY*SY/NP
      REG=TOT-RES
      SYY=RES/DF
      ST=1.96+2.72/DF+8.04/DF**3
      DET=1.
      DO 30 I=1,NF
      DET=DET*B  (I,I)
   30 A(I,I)=1.0/A(I,I)
      DO 32 I=2,NF
      DO 32 J=2,I
      SY=0.
      DO 31 K=J,I
   31 SY=SY-A(I,K-1)*A(K-1,J-1)
   32 A(I,J-1)=SY*A(I,I)
      PRINT 37
      DO 36 I=1,NF
      L=NF-I
      DO 33 J=1,L
      K=NF-J
      DO 33 M=1,J
      N=NF-M+1
   33 A(K,I)=A(K,I)-A(K,N)*A(N,I)
      DO 34 J=2,I
   34 A(J-1,I)=A(I,J-1)*SYY
      DO 35 J=1,I
   35 A(I,J)=A(I,J)*SYY
      BB=B(I,I)
```

Appendix D. Continued.

```
C       BB IS THE VARIANCE OF THE COEFFICIENTS
        IF(BB.LT.0.0) BB=-BB
        FF=ST*SQRT(BB)
        BBB=B(I,NY)
     66 PRINT 371,BBB,FF
        IF(SYY.LT.0.0) SYY=-SYY
        CORR=REG/TOT
        PRINT 36,RES,REG,TOT,SYY,DET,CORR,NP
        SER = RES  D  Y = SQRT(SER/DF)
        RETURN
     44 PRINT 45
        STOP
        END
```

```
      PROGRAM ETHRM8A (INPUT,OUTPUT)
C     ETHANE THERMOFUNCTIONS, BRITISH UNITS, REVISED NOV. 20, 1976.
C     ENTER COMPR. LIQ. STATES VIA NBS(RODER) CV ON ISOCHORE RB, AND CSAT.
C     NOTE THAT TSATF(DEN) ITERATES ON DENGASF(T), DENLIQF(T).
C     NOTE TTRP = -297.0436 F,  TCRT = 89.9240 F.
C     NOTE DCRT = 12.7650 LB/CUFT,  PCRT = 706.536 PSI.
      COMMON B1,B2,B3, C1,C2,C3, E1,E2,E3, ER
      COMMON/1/GK,AL,BB,BE,GA,DE,EP, DCRT,TCRT,PCRT,DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/4/ XB1,XB2, XC1,XC2, XE1,XE2, DXBDR,DXCDR,DXEDR
      COMMON/5/ DDSDT
      COMMON/6/ TSAT, THETA, PSAT
      COMMON/7/ TA,TB,PB,RB, EA,HA,SA, EB,HB,SB
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/9/ AU,BU,CU,DU, AS,BS,CS,DS,ES, ETB,STB,STA
      COMMON/11/ JT, TR, TF
      COMMON/99/ TI,EZZ, EZ,SZ,CVZ, HZ,CPZ
      DIMENSION PSI(99)
    1 FORMAT(I5, 2F10.0)
    2 FORMAT(I5, 3F10.0)
    5 FORMAT(1X)
   10 FORMAT(1H1 9X *ETHANE FUNCTIONS ON ISOCHORE RB = 14.5 MOL/L* //
     1 10X 7HAT TB =F8.3, 6H, PB =F8.3, 7H, DEN =F7.3//
     2 10X 4HEB =F10.2, 6H, HB =F10.2, 6H, SB =F10.4//
     3 10X 4HCV =F8.3, 10H, CV,XPT =F8.3///
     4 10X 7HAT TA =F9.4, 6H, PS =F8.3, 7H, DEN =F7.3//
     5 10X4HEA =F10.2, 6H, HA =F10.2, 6H, SA =F10.4//10X 4HCV =F8.3///
     6 10X 5HETB =E17.9, 7H, STB =E17.9, 7H, STA =E17.9)
   12 FORMAT(8F10.0)
   14 FORMAT(1H1 18X *ETHANE ISOBAR AT P =* F9.5, 4H PSI / )
   15 FORMAT(1H1 18X *ETHANE ISOBAR AT P =* I6, 4H PSI / )
   16 FORMAT(14X 1HT 8X1HT 6X3HDEN 6X3HVOL 4X5HDP/DT 6X5HDP/DD
     2 7X1HE 7X1HH 8X1HS 7X2HCV 7X2HCP 5X1HW /
     3 10X5HDEG F 4X5HDEG R 2X7HLB/CUFT 2X7HCUFT/LB 4X5HPSI/R
     4 1X10HPSICUFT/LB 2X6HBTU/LB 2X6HBTU/LB 1X8HBTU/LB/R
     5 1X8HBTU/LB/R 1X8HBTU/LB/R 2X4HFT/S )
   17 FORMAT(6X 2F9.3, F9.3, F9.5, F9.3, F11.2, 2F8.2, F9.5, 2F9.3,I6)
   18 FORMAT(6X 2F9.3, F9.4, F9.4, F9.4, F11.2, 2F8.2, F9.5, 2F9.3,I6)
   19 FORMAT(6X 2F9.3, F9.5, F9.3, F9.5, F11.2, 2F8.2, F9.5, 2F9.3,I6)
C
C     CONSTANTS FOR EQNSTATE MARK VII,  4/12/76.
   22 WM = 30.07  $  WK = 100000/WM  $  GKK = 0.0831434
   23 Q = 1.01325   $   QP = 14.69595/Q
   24 TTRP = 90.348  $  DTRP = 21.68  $  PTRP = 1.130842618E-5
   25 TCRT = 305.33  $  DCRT = 6.80   $  PCRT = PSATF(TCRT)
   26 DGAT = 1.5153661E-6  $  GK = DCRT*GKK  $  EZZ = 4.1868*4827.2
   27 AL = 1  $  DE = 2.0/3.0  $  ER = 2  $  BB=BE=GA=EP=0
   28 B1 = 0.48752227313  $  B2 = 0.33198750982  $  B3 = 0.06854249828
   29 E1 =-0.43113918548  $  E2 = 0.0            $  E3 = 0.03779460468
C
C     INTEGRATION CONSTANTS FOR CVSUMIT, SSATF(T).
   30 TB=330 $ RB=14.5 $ TA=TSATF(RB) $ X=TB/TCRT $ G=ALOG(X)
   31 AU=64.0253 $ BU=-163.36173 $ CU=205.55275 $ DU=-54.77598
   32 ETB = AU*G + BU*X + CU*X*X/2 + DU*X*X*X/3
   33 STB = -AU/X + BU*G + CU*X + DU*X*X/2
   34 AS=22.64822683 $ BS=0.08796160711 $ CS=1.090640627
   35 DS=5371.201054 $ ES=-212338.994 $ T=TA $ TD=(TCRT-T)**0.4
```

```
   36 STA = AS*ALOG(T) + BS*T - CS*TD/0.4 - DS/T - ES/2/T/T
C
C     ESTABLISH TB,TA, EB,SB, EA,SA, ON ISOCHORE RB ≡ 14.5 MOL/L.
   39 T = TB  $  P = PB = PVTF(T,RB,0)  $  CALL THRMOGS
   40 RC=DEN $ EB=E $ HB=H $ SB=S $ CVB=CV $ CVX=CVXF(T)
   41 T = TA  $  CALL CVSUMIT  $  EA = E  $  SA = S
   42 PSTA = PS = PSATF(TA)  $  HA = EA + 100*PS/RB
   43 PRINT 10, TB,PB,RC, EB,HB,SB, CVB,CVX, TA,PS,DEN, EA,HA,SA,CV,
     1 ETB, STB, STA
C     NOTE RESULTS FOR COMPUTED DATA -
C     AT TB ≡ 330 K, RB ≡ 14.5 MOL/L, PB = 422.095 BAR,
C     EB =  21321.64 J/MOL,  SB = 165.4420 J/MOL/K,
C     CV,CALC = 56.108,  CV,XPT = 54.053 J/MOL/K.
C     FOR CVSUMIT,  ETB = -74.58239 J/MOL/K,  STB = 118.23635 J/MOL/K,
C     AT TA = 256.5624 K, RB ≡ 14.5 MOL/L, PSTA = 15.616 BAR,
C     AND, FOR ESATF(T),  SSATF(T),  EA =  17628.86 J/MOL,
C     SA = 152.8227 J/MOL/K,  STA = 115.97498 J/MOL/K.
  100 CALL JTLOCUS  $  CALL TABLIQ
C
C     COMPUTE THERMOFUNCTIONS ON ISOBARS.
C     EACH ISOBAR STARTS ON THE MELTING LINE.
C     ISOBARS AT P UNDER PCRT TRAVERSE THE DOME.
  110 IN = 1  $  NI = 69  $  READ 12, (PSI(I),I=1,NI)
  111 DO 300 I=IN,NI  $  IK = I  $  IPSI = PSI(I)  $  P = PSI(I)/QP
  112 IF(I.EQ.4) 113,114
  113 PRINT 14, PSI(I)  $  GO TO 115
  114 PRINT 15, IPSI
  115 PRINT 16
  120 T = FINDTMF(P)  $  CALL LIQTHRM  $  CALL CONVERT $ V=1/DEN $ IW=W
  122 PRINT 17, TF,TR,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW
  123 IT = TF/20 - 1  $  IF(P.LT.PCRT) 125,200
C
C     TWO MAIN CASES FOR P UNDER PCRT.
C     NOTE 20 DEG.F STEPS FROM -280 THRU 800 F, (55 POINTS).
  125 TS = FINDTSF(P)  $  TX = TS + 20/1.8  $  K = L = 0
  130 DO 199 J=1,99  $  JT = 20*(IT + J)
  131 T = TT = 273.15 + (JT-32)/1.8
  132 IF(P-PSTA) 133,133,150
C     MAIN CASE A FOR P NO GREATER THAN PSTA.
  133 IF(T.LT.TS) 134,136
  134 CALL LIQTHRM  $  CALL CONVERT  $  V = 1/DEN  $  IW = W
  135 PRINT 17, TF,TR,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW  $  GO TO 199
  136 IF(T.LT.TX) 137,180
  137 T = TS  $  CALL SATLQTR $ CALL CONVERT $ V=1/DEN $ IW=W
  138 PRINT 17, TF,TR,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW  $  PRINT 5
  139 CALL SATGSTR  $  CALL CONVERT $  V=1/DEN $ IW=W
  140 IF(P.GT.10.0) 141,142
  141 PRINT 18, TF,TR,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW  $  GO TO 143
  142 PRINT 19, TF,TR,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW
  143 T = TT  $  GO TO 180
C     MAIN CASE B FOR P GREATER THAN PSTA.
  150 IF(T-TA) 151,151,153
  151 CALL LIQTHRM  $  CALL CONVERT  $  V=1/DEN $ IW=W
  152 PRINT 17, TF,TR,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW  $  GO TO 199
  153 IF(T.LT.TS) 154,156
  154 CALL THRMOX  $  CALL CONVERT  $  V=1/DEN $ IW=W
  155 PRINT 17, TF,TR,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW  $  GO TO 199
```

```
  156 IF(T.LT.TX) 157,160
  157 T = TS  $  CALL THRMXL  $  CALL CONVERT $  V=1/DEN $ IW=W
  158 PRINT 17, TF,TR,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW  $  PRINT 5
  159 CALL SATGSTR  $  CALL CONVERT $  V=1/DEN $ IW=W
  160 PRINT 18, TF,TR,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW  $  T = TT
C     CASES FOR HOMOGENEOUS DOMAIN, DEN ≤ DCRT, OR T ≥ TB.
  180 IF(JT.GT.600) 181,183
  181 K = K+1  $  JT = JT + 20*K  $  IF(JT.GT.800) 300,182
  182 T = 273.15 + (JT-32)/1.8
  183 CALL HOMOTRM  $  CALL CONVERT  $  V=1/DEN $ IW=W
  184 IF(P.GT.10) 185,186
  185 PRINT 18, TF,TR,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW  $  GO TO 199
  186 PRINT 19, TF,TR,DEN,V, DPDT,DPDD, E,H,S, CV,CP,IW
  199 CONTINUE
C
C     CASES FOR P > PCRT.
  200 K = L = 0  $  DO 230 J=1,99  $  JT = 20*(IT+J)
  201 T = 273.15 + (JT-32)/1.8
  202 IF(T.LT.TB) 203,220
  203 IF(T.LT.TA) 204,206
  204 CALL LIQTHRM  $  CALL CONVERT  $  V = 1/DEN  $  IW = W
  205 PRINT 17, TF,TR,DEN,V,DPDT,DPDD,E,H,S,CV,CP,IW  $  GO TO 230
  206 IF(T.LT.TCRT) 211,207
  207 PX = PVTF(T,DCRT,0)  $  IF(P.GT.PX) 211,225
C     CASE FOR REGION X AT TA < T < TB, P ABOVE CRITICAL ISOCHORE.
  211 CALL THRMOX  $  CALL CONVERT  $  V = 1/DEN  $  IW = W
  212 PRINT 17, TF,TR,DEN,V,DPDT,DPDD,E,H,S,CV,CP,IW  $  GO TO 230
C     CASES FOR HOMOGENEOUS DOMAIN, DEN ≤ DCRT, OR T ≥ TB.
  220 IF(JT.GT.600) 221,225
  221 K = K+1  $  JT = JT + 20*K  $  IF(JT.GT.800) 300,222
  222 T = 273.15 + (JT-32)/1.8
  225 CALL HOMOTRM  $  CALL CONVERT  $  V = 1/DEN  $  IW = W
  226 PRINT 17, TF,TR,DEN,V,DPDT,DPDD,E,H,S,CV,CP,IW
  230 CONTINUE
  300 CONTINUE
  999 STOP    $    END
```

```
      SUBROUTINE CONSAT
C     CONVERT SI TO BRITISH UNITS, ETHANE MW = 30.07 G/MOL.
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/11/ JT, TR, TF
      COMMON/12/ TT,PS,DL, DDLDT, VG,VL,Q, QX,CSX
      DATA (EK=69.8960223),(SK=125.812840),(DK=0.53270577)
      DATA (PTK=0.12410562),(PDK=0.129428985)
    1 TR = 1.8*TT  $  TF = 32 + 1.8*(TT-273.15)
    2 PS = PS*14.503775    $    DPSDT = DPSDT/PTK
    3 DPDT = DPDT/PTK  $  DPDD = DPDD/PDK  $  DDLDT = DDLDT/DK/1.8
    4 DL = DL/DK  $  VG = VG*DK  $  VL = VL*DK
    5 E=E/EK $ H=H/EK $ Q=Q/EK $ QX=QX/EK $ CSX=CSX/SK
    6 S = S/SK  $  CV = CV/SK  $  CP = CP/SK  $  CSAT = CSAT/SK
    9 W = 3.28084*W    $    RETURN  $  END
```

```
      SUBROUTINE CONVERT
C     CONVERT SI TO BRITISH UNITS, ETHANE MW = 30.07 G/MOL.
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/11/ JT, TR, TF
      DATA (EK=69.8960223),(SK=125.812840),(DK=0.53270577)
      DATA (PTK=0.12410562),(PDK=0.129428985)
    1 TR = 1.8*T  $  TF = 32 + 1.8*(T-273.15)
    2 DEN = DEN/DK  $  E = E/EK  $  H = H/EK
    3 S = S/SK  $  CV = CV/SK  $  CP = CP/SK  $  W = 3.28084*W
    4 DPDT = DPDT/PTK  $  DPDD = DPDD/PDK
    5 RETURN  $  END
```

```
      SUBROUTINE HOMOTRM
C     VALID ONLY AT T,F = INTEGER MULTIPLES OF 20 DEG.F.
C     GIVEN P,T FOR HOMOGENEOUS DOMAIN, GET DEN AND FUNCTIONS.
C     SAVE DK(T), EK(T), SK(T), CK(T) ALONG EACH ISOBAR.
C     NOTE, -280 ≤ JT ≤ 800,  1 ≤ (JT/20 + 15) ≤ 55 POINTS.
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/11/ JT, TR, TF
      COMMON/99/ TI,EZZ, EZ,SZ,CVZ, HZ,CPZ
      DIMENSION DK(70),EK(70),SK(70),CK(70)
      DATA (Q=1.01325),(G=0.0831434)
    1 J = JT/20 + 15  $  IF(IK.EQ.IN) 2,10
    2 TI = T  $  CALL IDEAL  $  DA = 0
    3 DK(J) = DEN = DB = FINDENF(T,P)  $  N = DB*20 + 10
    4 EK(J) = E = EZZ + EZ + ESUMF(N,T,DA,DB)
    5 SK(J) = S = SZ + SSUMF(1,N,T,DA,DB) - 100*G*ALOG(G*T*DB/Q)
    6 CK(J) = CV = CVZ + CSUMF(N,T,DA,DB)  $  GO TO 20
   10 DA = DK(J)  $  DK(J) = DEN = DB = FINDENF(T,P)
   12 DX = ABS(DB-DA)  $  N = (DX+1)*5
   13 EK(J) = E = EK(J) + ESUMF(N,T,DA,DB)
   14 SK(J) = S = SK(J) + SSUMF(0,N,T,DA,DB)
   15 CK(J) = CV = CK(J) + CSUMF(N,T,DA,DB)
   20 H = E + 100*P/DB  $  PX = PVTF(T,DB,1)
   21 CP = CV + 100*T/DPDD*(DPDT/DB)**2
   22 W = SQRT(WK*CP*DPDD/CV)  $  RETURN  $  END
```

```
      SUBROUTINE JTLOCUS
C     DERIVE THE J-T INVERSION CURVE.  USE ROUTINE DELTAF(T,DI).
      DIMENSION TT(99),TF(99),PP(99),DN(99)
      DATA (DCRT=6.80),(TCRT=305.33)
    1 FORMAT(1H1 16X *THE JOULE-THOMSON INVERSION LOCUS FOR  ETHANE*//
     1 12X 3HT,F 5X3HT,R 2X5HP,PSI 2X7HLB/CUFT
     2  9X 3HT,F 5X3HT,R 2X5HP,PSI 2X7HLB/CUFT )
    2 FORMAT(3X 2(F12.2, F8.2, I7, F9.2))
    3 PRINT 1  $  NP = 64
    4 DO 25 I=1,NP  $  TF(I) = -20 + 10*I
    5 TT(I) = 459.67 + TF(I)  $  T = TT(I)/1.8
```

Appendix D. Continued.

```
    6 X = T/TCRT   $   DX = 1.6
    9 DI = DCRT*(2.40 - 0.58*X + 0.24/X)
   10 IF(T-TCRT) 11,12,12
   11 DL = DENLIQF(T)  $  IF(DI-DL) 25,12,12
   12 SS = DELTAF(T,DI)  $  DO 20 IT=1,15
   14 D=DI-DX $ SL=DELTAF(T,D)   $   D=DI+DX $ SP=DELTAF(T,D)
   15 IF(SS-SL) 18,16,16
   16 IF(SP-SL) 19,17,17
   17 SS = SL  $  DI = DI - DX  $  GO TO 20
   18 IF(SS-SP) 20,20,19
   19 SS = SP  $  DI = DI + DX
   20 DX = DX/2  $  DN(I) = DI/0.53270577
   21 PP(I) = 14.503774*PVTF(T,DI,0)
   25 CONTINUE  $  N = NP/2  $  DO 29 J=1,N
   26 IP = PP(J)   $   IPP = PP(J+N)
   29 PRINT 2, TF(J),TT(J),IP,DN(J), TF(J+N),TT(J+N),IPP,DN(J+N)
   30 RETURN   $   END
      SUBROUTINE TABLIQ
C    TABULATE THE ETHANE SATURATED LIQUID FUNCTIONS.
      COMMON/1/GK,AL,BB,BE,GA,DE,EP, DCRT,TCRT,PCRT,DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/5/ DDSDT
      COMMON/7/ TA,TB,PB,RB, EA,HA,SA, EB,HB,SB
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/11/ JT, TR, TF
      COMMON/12/ TT,PS,DL, DDLDT, VG,VL,Q, QX,CSX
      DIMENSION TSA(46), PSA(46)
    1 FORMAT(1H1 13X *PROPERTIES OF SATURATED LIQUID ETHANE* / )
    2 FORMAT(14X1HT 10X1HP 5X3HDEN 4X5HV,LIQ 6X5HV,GAS 5X6HDPS/DT
     1 4X6HDDL/DT 5X5HDP/DT 6X5HDP/DD 3X5HQ,VAP 2X5HQ,XPT /
     2 10X5HDEG F 8X3HPSI 1X7HLB/CUFT 2X7HCUFT/LB 4X7HCUFT/LB 6X5HPSI/R
     3 1X9HLB/CUFT/R 5X5HPSI/R 1X10HPSICUFT/LB 2X6HBTU/LB 1X6HBTU/LB )
    3 FORMAT(5X F10.3, E11.4, F8.3, F9.6, 2E11.4, F10.6, F10.3,
     1 E11.4, F8.2, F7.2)
    4 FORMAT(14X1HT 8X1HT 10X1HP 8X1HE 8X1HH 8X1HS 7X2HCV 7X2HCS 7X2HCP
     1 6X1HW 4X6HCS,XPT /
     2 10X5HDEG F 4X5HDEG R 8X3HPSI 3X6HBTU/LB 3X6HBTU/LB
     3 1X8HBTU/LB/R 1X8HBTU/LB/R 1X8HBTU/LB/R 1X8HBTU/LB/R 3X4HFT/S
     4 2X8HBTU/LB/R )
    5 FORMAT(6X 2F9.3, E11.4, 2F9.3, F9.5, 3F9.3, I7, F10.3)
C    FOR PAGE ONE OF TABLIQ.
C    NOTE,   TTRP = -297.0436 F,  TCRT = 89.9240 F.
   10 PRINT 1  $  PRINT 2  $  NP = 39
   11 DO 25 J=1,NP  $  IF(J.EQ.1) 12,13
   12 TT = TTRP  $  GO TO 17
   13 IF(J.EQ.NP) 14,16
   14 TT = TCRT  $  DG = DL = DCRT  $  DDLDT = 0
   15 VG = VL = 1/DG   $   GO TO 19
   16 FT = -300 + 10*J  $  TT = (FT-32)/1.8 + 273.15
   17 DL = DENLIQF(TT)  $  DDLDT = DDSDT
   18 DG = DENGASF(TT)  $  VG = 1/DG  $  VL = 1/DL
   19 TSA(J) = TT  $  PSA(J) = PS = PSATF(TT)
   20 Q = 100*TT*DPSDT*(VG-VL)  $  QX = QVAPXF(TT)
   21 PX = PVTF(TT,DL,1)   $   CALL CONSAT
   25 PRINT 3, TF,PS, DL,VL,VG, DPSDT,DDLDT, DPDT,DPDD, Q,QX
C    FOR PAGE TWO OF TABLIQ.
C    USE SATLQTR AT T < TA,  USE THRMXL AT T > TA.
   30 PRINT 1  $  PRINT 4
   31 DO 40 J=1,NP  $  TT = T = TSA(J)  $  PS = P = PSA(J)
   32 CSX = CSATXF(T)  $  IF(T.LT.TA) 34,35
   34 CALL SATLQTR  $  GO TO 36
   35 CALL THRMXL
   36 CALL CONSAT  $  IW = W
   40 PRINT 5, TF,TR,PS, E,H,S, CV,CSAT,CP, IW, CSX
   99 RETURN   $   END
```

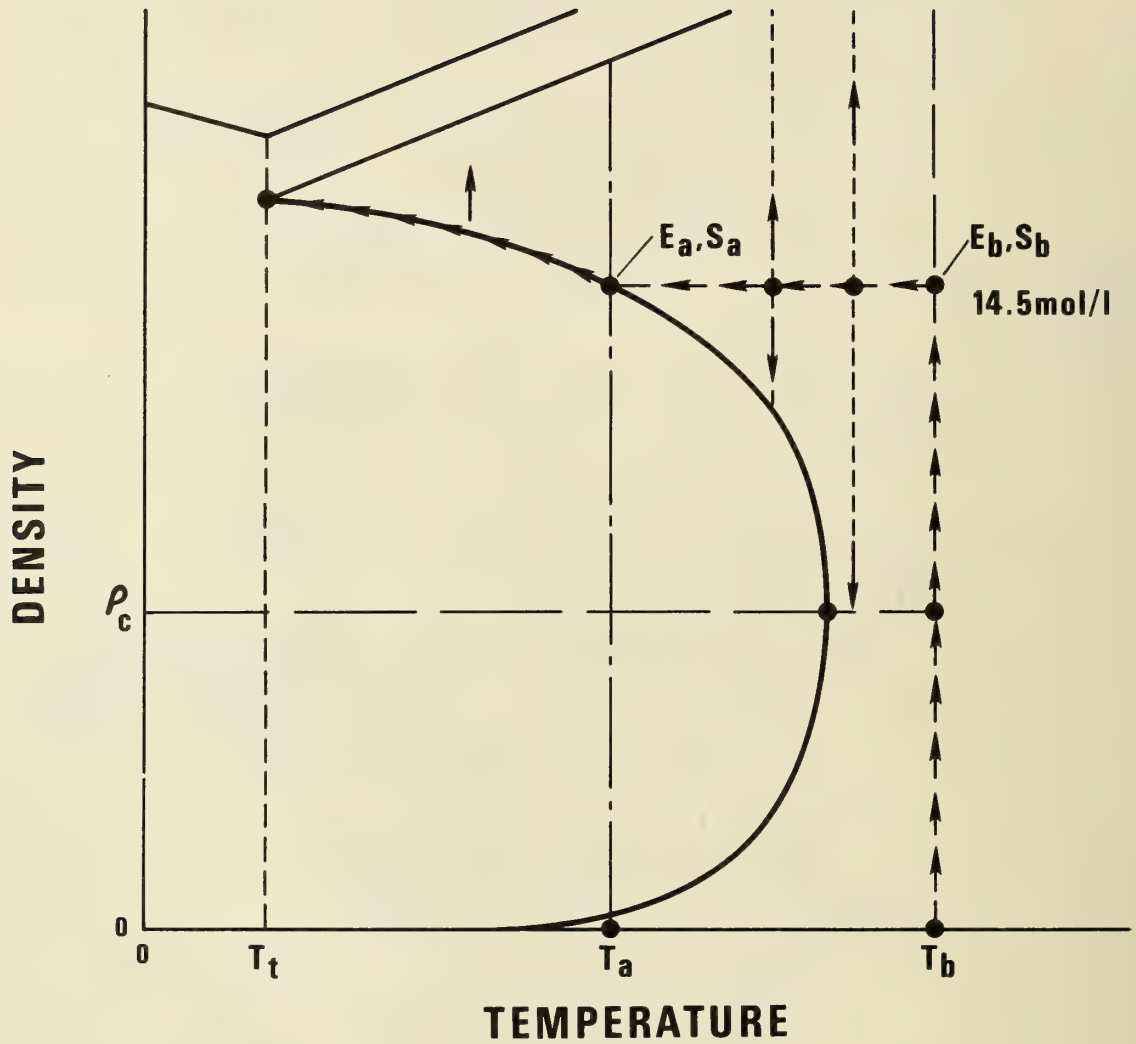

Figure 1. Generalized density-temperature phase diagram, showing paths used for thermal computations.

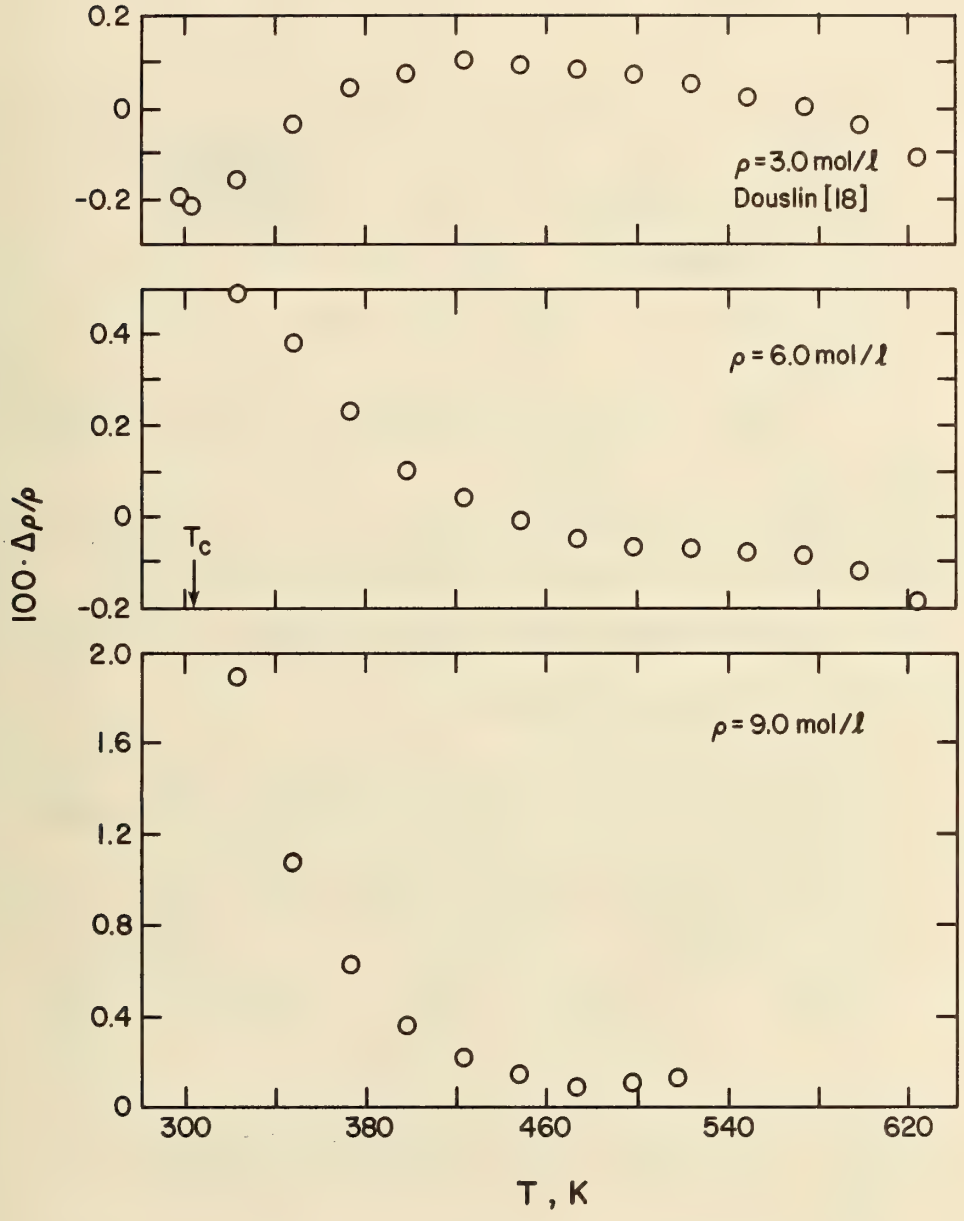

Figure 2. Deviation plots for densities.

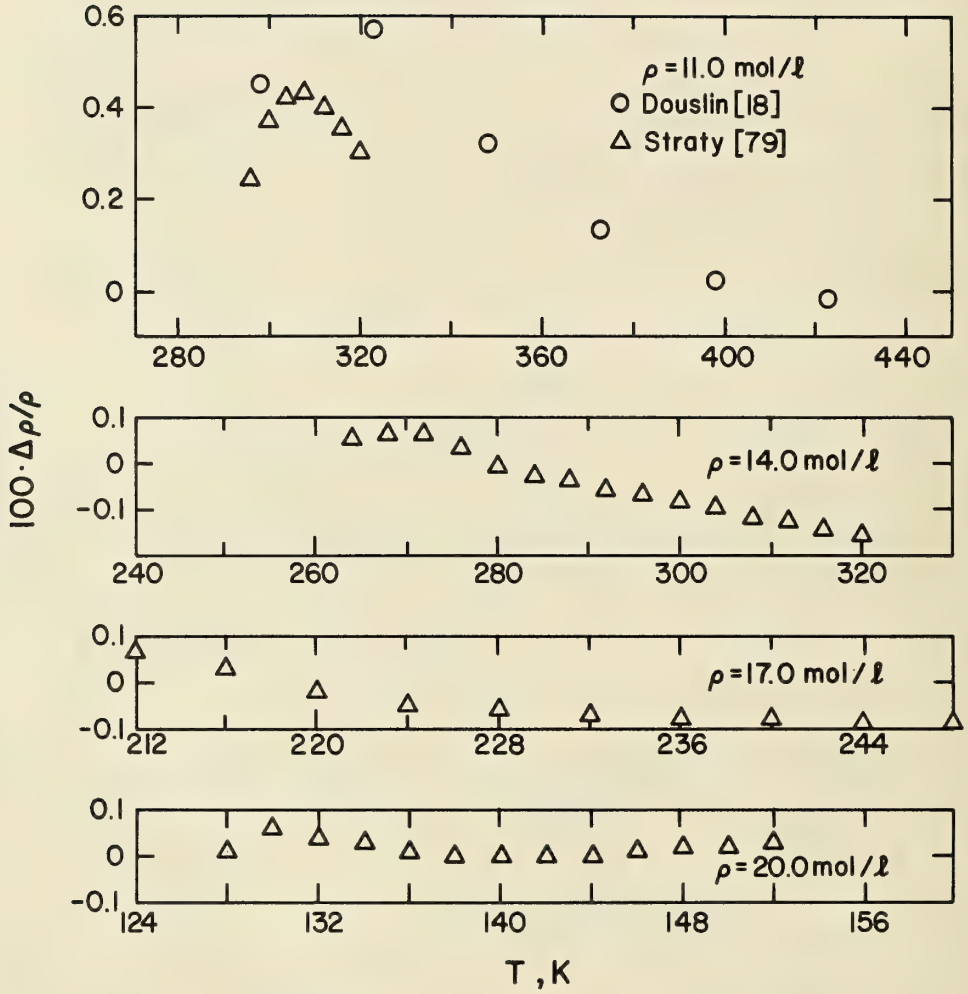

Figure 2. Deviation plots for densities, continued.

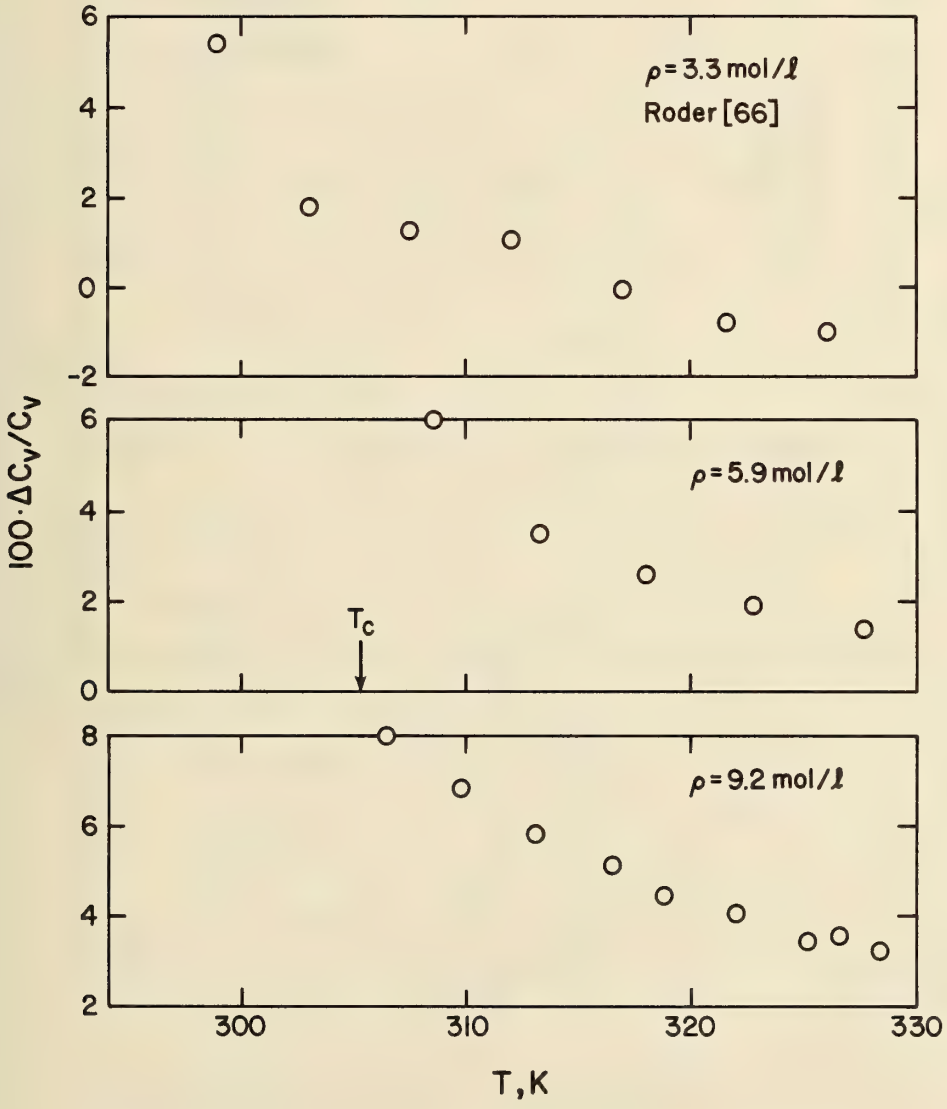

Figure 3. Deviation plots for specific heats.

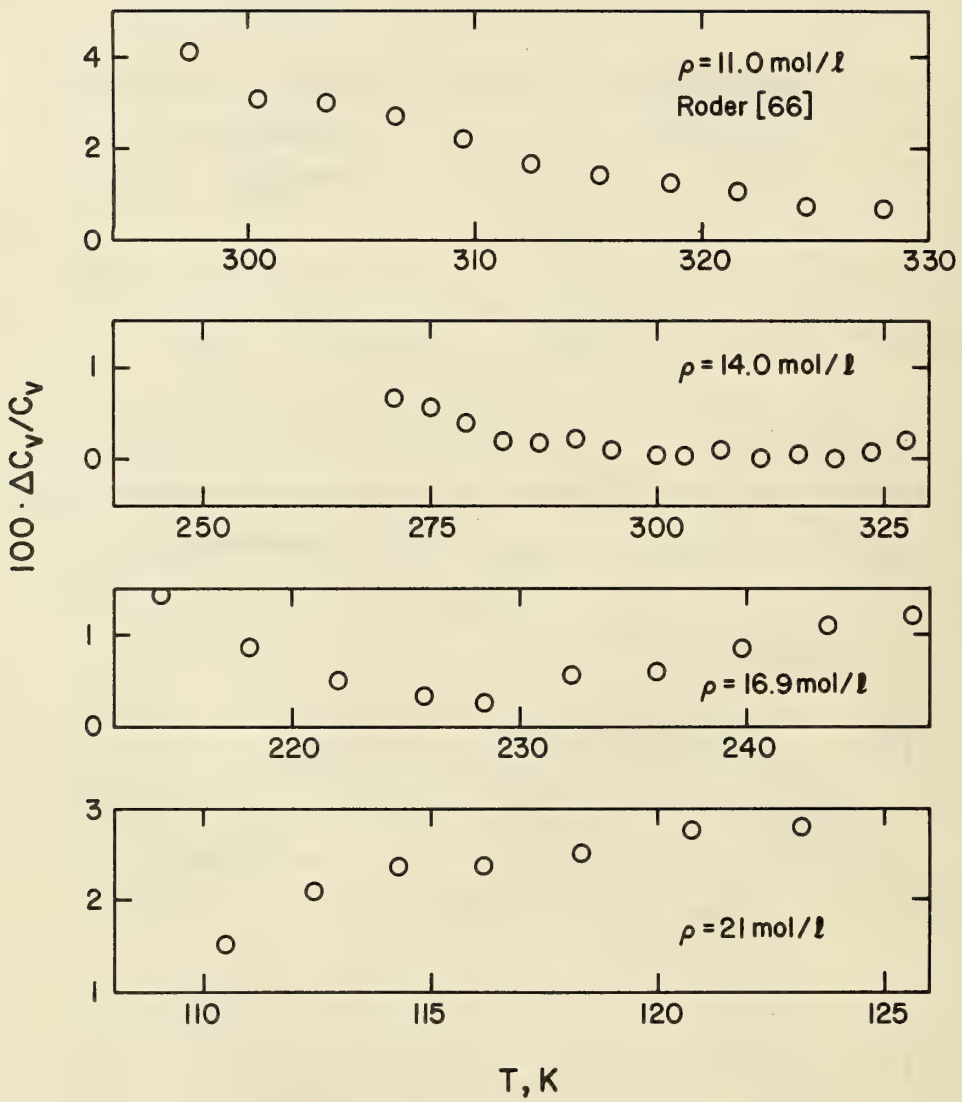

Figure 3. Deviation plots for specific heats, continued.

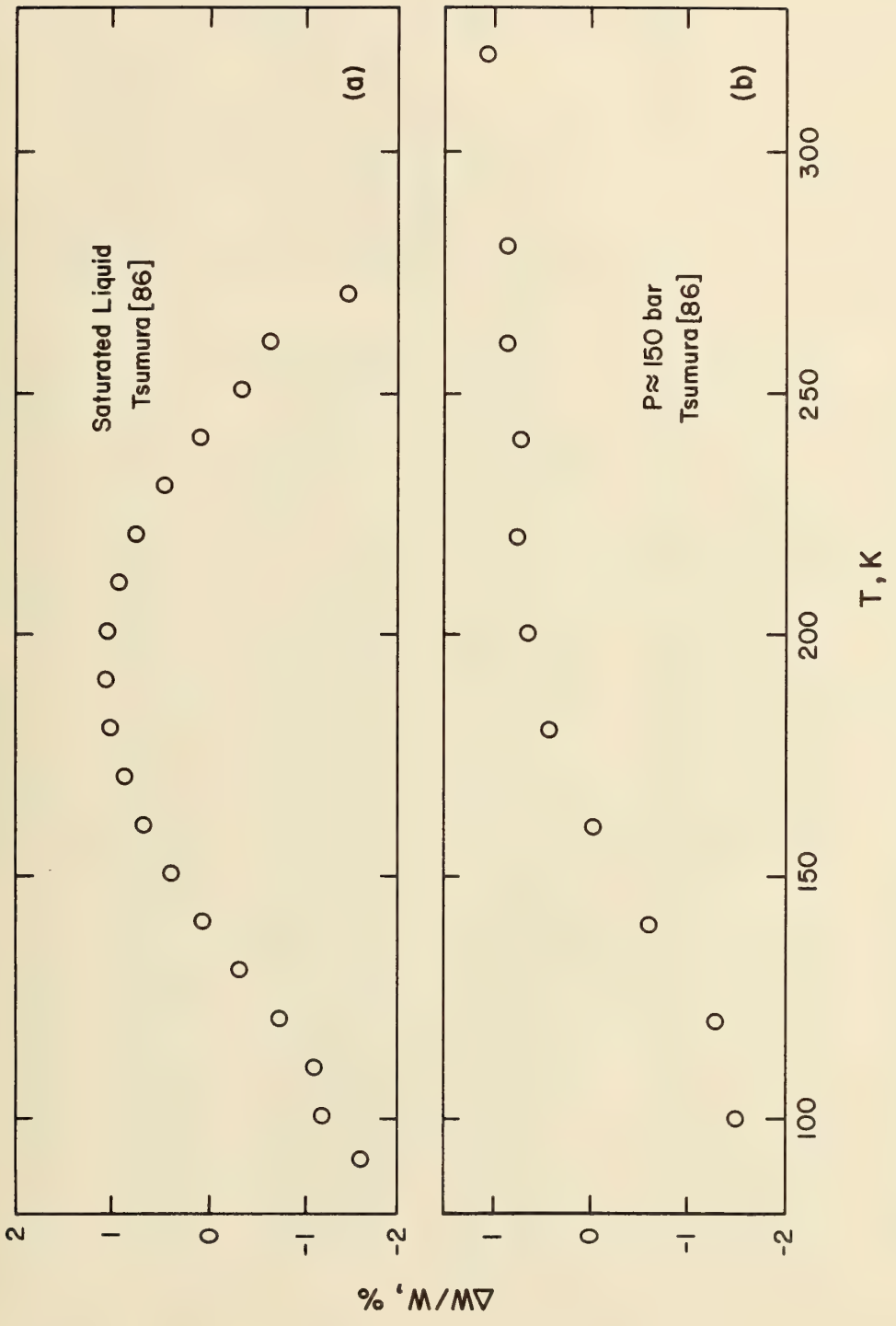

Figure 4. Deviation plots for speeds of sound.

Table 1. Experimental and calculated vapor pressures.

Data sources for this table are--

ID	Author	Reference
4	Pal	[61]
7	Ziegler	[93]
9	Pope	[61]
10	Douslin	[18]
90	Straty	[79]

Table 1. Experimental and calculated vapor pressures.

ETHANE VAPOR PRESSURES, EPP = 1.3...

TTRP = 90.348, TCRT = 305.330

PTRP = .1130842618E-04, PCRT,BAR = 48.7140158

-11.3899624307 18.8452282876 -7.6354151345
5.4284431036 -1.3623271362 .7692492586

ID	WT	T,K	P,BAR	CALCD	P,PCT	DEL T	DPS/DT
7	1.00	100.010	.11123E-03	.11123E-03	.003	-.000	.23541E-04
7	1.00	109.998	.74621E-03	.74646E-03	-.034	.002	.12805E-03
7	1.00	119.989	.35397E-02	.35393E-02	.011	-.001	.50040E-03
7	1.00	129.987	.12896E-01	.12893E-01	.025	-.002	.15240E-02
7	1.00	139.992	.38293E-01	.38283E-01	.025	-.002	.38311E-02
7	1.00	150.000	.96739E-01	.96722E-01	.017	-.002	.82873E-02
90105	1.00	160.000	.21502E+00	.21461E+00	.192	-.026	.15907E-01
7	1.00	160.010	.21477E+00	.21477E+00	.002	-.000	.15916E-01
90104	1.00	165.000	.30670E+00	.30700E+00	-.099	.014	.21239E-01
90106	1.00	170.000	.42870E+00	.42899E+00	-.067	.010	.27764E-01
7	1.00	170.019	.42949E+00	.42952E+00	-.006	.001	.27791E-01
90107	1.00	175.000	.58636E+00	.58684E+00	-.081	.013	.35605E-01
90108	1.00	180.000	.78734E+00	.78743E+00	-.011	.002	.44881E-01
90112	1.00	180.000	.78706E+00	.78743E+00	-.047	.008	.44881E-01
7	1.00	180.027	.78855E+00	.78864E+00	-.012	.002	.44935E-01
7	1.00	184.550	.10133E+01	.10134E+01	-.013	.003	.54661E-01
90109	1.00	185.000	.10384E+01	.10382E+01	.018	-.003	.55701E-01
90110	1.00	190.000	.13463E+01	.13472E+01	-.065	.013	.68163E-01
90110	1.00	190.000	.13472E+01	.13472E+01	.002	-.000	.68163E-01
90111	1.00	195.000	.17221E+01	.17227E+01	-.037	.008	.82357E-01
90111	1.00	195.000	.17226E+01	.17227E+01	-.008	.002	.82357E-01
9	1.00	198.181	.19999E+01	.20004E+01	-.026	.006	.92326E-01
90113	1.00	200.010	.21726E+01	.21738E+01	-.054	.012	.98364E-01
90113	1.00	200.000	.21732E+01	.21738E+01	-.026	.006	.98364E-01
90114	1.00	205.000	.27093E+01	.27095E+01	-.008	.002	.11625E+00
90114	1.00	205.000	.27100E+01	.27095E+01	.018	-.004	.11625E+00
90407	1.00	210.000	.33413E+01	.33395E+01	.053	-.013	.13609E+00
90408	1.00	210.000	.33417E+01	.33395E+01	.065	-.016	.13609E+00
90115	1.00	210.000	.33398E+01	.33395E+01	.008	-.002	.13609E+00
90115	1.00	210.000	.33399E+01	.33395E+01	.011	-.003	.13609E+00
4	1.00	214.302	.39726E+01	.39646E+01	.208	-.053	.15475E+00
90116	1.00	215.000	.40734E+01	.40737E+01	-.008	.002	.15793E+00
90117	1.00	220.000	.49216E+01	.49222E+01	-.012	.003	.18182E+00
4	1.00	224.102	.57114E+01	.57110E+01	.008	-.002	.20298E+00
90118	1.00	225.000	.58973E+01	.58954E+01	.032	-.009	.20781E+00
4	1.00	229.756	.69478E+01	.69465E+01	.019	-.005	.23453E+00
90119	1.00	230.000	.70048E+01	.70059E+01	-.013	.004	.23595E+00

Table 1. Continued.

ID	WT	T,K	P,BAR	CALCD	P,PCT	DEL T	DPS/DT
4	1.00	234.558	.81400E+01	.81415E+01	-.019	.006	.26351E+00
9	1.00	234.692	.81811E+01	.81768E+01	.052	-.016	.26435E+00
90120	1.00	235.000	.82596E+01	.82585E+01	.013	-.004	.26628E+00
10	1.00	238.150	.91291E+01	.91290E+01	.001	-.000	.28654E+00
9	1.00	238.771	.93060E+01	.93062E+01	-.024	.008	.29064E+00
4	1.00	239.844	.96218E+01	.96239E+01	-.022	.007	.29780E+00
90121	1.00	240.000	.96660E+01	.96704E+01	-.046	.015	.29885E+00
4	1.00	240.514	.98245E+01	.98249E+01	-.005	.002	.30233E+00
10	1.00	243.150	.10646E+02	.10646E+02	-.002	.001	.32054E+00
4	1.00	243.359	.10716E+02	.10713E+02	.031	-.010	.32202E+00
90122	1.00	245.000	.11244E+02	.11251E+02	-.061	.021	.33371E+00
90126	1.00	245.000	.11248E+02	.11251E+02	-.026	.009	.33371E+00
4	1.00	246.814	.11869E+02	.11868E+02	.006	-.002	.34694E+00
4	1.00	247.816	.12210E+02	.12220E+02	-.079	.027	.35438E+00
10	1.00	248.150	.12337E+02	.12338E+02	-.012	.004	.35688E+00
4	1.00	249.741	.12931E+02	.12916E+02	.119	-.042	.36894E+00
90123	1.00	250.000	.13000E+02	.13011E+02	-.088	.031	.37092E+00
90403	1.00	250.000	.13019E+02	.13011E+02	.058	-.020	.37092E+00
90404	1.00	250.000	.13021E+02	.13011E+02	.073	-.026	.37092E+00
90405	1.00	250.000	.13018E+02	.13011E+02	.050	-.018	.37092E+00
4	1.00	250.146	.13069E+02	.13066E+02	.023	-.010	.37205E+00
4	1.00	251.587	.13621E+02	.13610E+02	.079	-.028	.38324E+00
4	1.00	252.544	.13990E+02	.13980E+02	.066	-.024	.39078E+00
10	1.00	253.150	.14217E+02	.14219E+02	-.011	.004	.39561E+00
4	1.00	254.290	.14682E+02	.14675E+02	.048	-.017	.40478E+00
90124	1.00	255.000	.14956E+02	.14964E+02	-.055	.035	.41056E+00
4	1.00	257.543	.16035E+02	.16035E+02	-.000	.000	.43167E+00
10	1.00	258.150	.16297E+02	.16299E+02	-.012	.004	.43681E+00
90125	1.00	260.000	.17103E+02	.17121E+02	-.107	.040	.45270E+00
10	1.00	263.150	.18590E+02	.18591E+02	-.008	.003	.48059E+00
4	1.00	263.380	.18699E+02	.18702E+02	-.015	.006	.48267E+00
90127	1.00	265.000	.19479E+02	.19496E+02	-.085	.033	.49748E+00
4	1.00	267.536	.20792E+02	.20787E+02	.021	-.009	.52124E+00
10	1.00	268.150	.21108E+02	.21109E+02	-.006	.002	.52710E+00
90128	1.00	270.000	.22080E+02	.22101E+02	-.093	.038	.54504E+00
4	1.00	271.749	.23068E+02	.23069E+02	-.005	.002	.56237E+00
9	1.00	272.949	.23762E+02	.23751E+02	.047	-.019	.57448E+00
10	1.00	273.150	.23867E+02	.23867E+02	.001	-.000	.57653E+00
90129	1.00	275.000	.24931E+02	.24951E+02	-.080	.033	.59561E+00
90202	1.00	275.000	.24932E+02	.24951E+02	-.076	.032	.59561E+00
4	1.00	275.922	.25492E+02	.25505E+02	-.050	.021	.60528E+00
4	1.00	276.363	.25793E+02	.25772E+02	.080	-.034	.60995E+00
4	1.00	276.385	.25786E+02	.25786E+02	.002	-.001	.61019E+00
4	1.00	276.514	.25886E+02	.25865E+02	.081	-.034	.61156E+00
4	1.00	277.813	.26667E+02	.26668E+02	-.004	.002	.62550E+00
10	1.00	278.150	.26882E+02	.26880E+02	.011	-.005	.62915E+00
90130	1.00	280.000	.28046E+02	.28062E+02	-.058	.025	.64951E+00

Table 1. Continued.

ID	WT	T,K	P,BAR	CALCD	P,PCT	DEL T	DPS/DT
90201	1.00	280.000	.28062E+02	.28062E+02	-.001	.000	.64951E+00
4	1.00	280.041	.28071E+02	.28069E+02	-.004	.028	.64997E+00
4	1.00	282.247	.29546E+02	.29550E+02	-.004	-.015	.67494E+00
10	1.00	283.150	.30171E+02	.30164E+02	.022	-.009	.68539E+00
4	1.00	284.635	.31174E+02	.31195E+02	-.067	.038	.70288E+00
9	1.00	284.845	.31366E+02	.31343E+02	.073	-.032	.70539E+00
90131	1.00	285.000	.31443E+02	.31452E+02	-.030	.013	.70724E+00
4	1.00	287.653	.33365E+02	.33371E+02	-.019	.008	.73969E+00
10	1.00	288.150	.33752E+02	.33741E+02	.035	-.016	.74593E+00
4	1.00	288.263	.33832E+02	.33825E+02	.022	-.010	.74735E+00
90132	1.00	290.000	.35135E+02	.35142E+02	-.021	.010	.76963E+00
4	1.00	290.040	.35147E+02	.35173E+02	-.075	.034	.77015E+00
9	1.00	290.214	.35337E+02	.35307E+02	.084	-.038	.77242E+00
4	1.00	292.236	.36927E+02	.36896E+02	.083	-.038	.79939E+00
4	1.00	293.098	.37573E+02	.37590E+02	-.047	.022	.81124E+00
10	1.00	293.150	.37651E+02	.37633E+02	.048	-.022	.81196E+00
9	1.00	293.266	.37761E+02	.37727E+02	.090	-.042	.81357E+00
4	1.00	296.347	.40287E+02	.40301E+02	-.037	.017	.85812E+00
10	1.00	298.150	.41897E+02	.41873E+02	.057	-.027	.88606E+00
90401	1.00	298.150	.41909E+02	.41873E+02	.085	-.040	.88606E+00
90402	1.00	298.150	.41889E+02	.41873E+02	.037	-.018	.88606E+00
4	1.00	299.665	.43219E+02	.43235E+02	-.035	.017	.91599E+00
9	1.00	299.863	.43455E+02	.43415E+02	.090	-.043	.91437E+00
90403	1.00	300.000	.43535E+02	.43541E+02	-.013	.006	.91673E+00
4	1.00	300.205	.43737E+02	.43729E+02	.018	-.009	.92029E+00
4	1.00	300.443	.43881E+02	.43948E+02	-.154	.073	.92446E+00
4	1.00	301.251	.44693E+02	.44701E+02	-.019	.009	.93908E+00
10	1.00	302.150	.45577E+02	.45553E+02	.052	-.025	.95631E+00
10	1.00	303.150	.46541E+02	.46520E+02	.046	-.022	.97721E+00
4	1.00	303.471	.46815E+02	.46835E+02	-.041	.020	.98453E+00
4	1.00	303.477	.46893E+02	.46841E+02	.112	-.053	.98464E+00
9	1.00	304.012	.47393E+02	.47371E+02	.048	-.023	.99777E+00
4	1.00	304.049	.47390E+02	.47408E+02	-.038	.018	.99873E+00
10	1.00	304.150	.47526E+02	.47509E+02	.035	-.017	.10014E+01
4	1.00	304.360	.47717E+02	.47720E+02	-.005	.002	.10073E+01
4	1.00	304.446	.47846E+02	.47806E+02	.082	-.039	.10098E+01
4	1.00	304.519	.47828E+02	.47880E+02	-.109	.052	.10121E+01
4	1.00	304.734	.48059E+02	.48098E+02	-.081	.038	.10191E+01
4	1.00	304.796	.48148E+02	.48162E+02	-.028	.013	.10213E+01
4	1.00	304.924	.48316E+02	.48293E+02	.049	-.023	.10263E+01
4	1.00	304.980	.48345E+02	.48350E+02	-.010	.005	.10287E+01
4	1.00	305.121	.48484E+02	.48496E+02	-.025	.012	.10357E+01
4	1.00	305.135	.48459E+02	.48510E+02	-.106	.050	.10365E+01
10	1.00	305.150	.48534E+02	.48526E+02	.017	-.008	.10374E+01
4	1.00	305.153	.48515E+02	.48529E+02	-.028	.013	.10376E+01
10	1.00	305.250	.48635E+02	.48630E+02	.011	-.005	.10449E+01

NP = 130, RMSPCT = .057

Table 2. Experimental and calculated saturated liquid densities.

Data sources for this table are--

ID	Author	Reference
5	*	
10	Douslin	[18]
11	Sliwinski	[75]
12	Chui	[14]
13	Klosek	[45]
14	Rodosevich	[67]
16	Tomlinson	[85]
20	Haynes	[37]
21	McClune	[52]
22	Orritt	[58]
23	Gugnoni	[33]

*Via our vapor-pressure equation, and isochores of Pal [61].

Table 2. Experimental and calculated saturated liquid densities.

SATD. LIQUID DENSITIES, F = .333

TTRP = 90.348, TCRT = 305.330, DCRT = 6.800, DTRP = 21.680

.719684501 .281866182 -.289937306

ID	WT	T,K	MOL/L	CALCD	PCNT	DDS/DT
11	1	305.150	7.827	7.816	.15	-1.9053
10	1	305.150	7.830	7.816	.18	-1.9053
11	1	304.650	8.397	8.396	.01	-.8050
11	1	304.150	8.732	8.730	.02	-.5670
10	1	304.150	8.737	8.730	.08	-.5670
11	1	303.160	9.190	9.188	.02	-.3875
10	1	303.150	9.201	9.192	.10	-.3864
11	1	302.160	9.534	9.531	.03	-.3071
10	1	302.150	9.544	9.534	.10	-.3065
16	0	302.160	9.578	9.531	.49	-.3071
11	1	300.660	9.937	9.939	-.02	-.2431
16	0	300.660	9.980	9.939	.42	-.2431
11	1	298.170	10.472	10.468	.04	-.1887
10	1	298.150	10.499	10.472	.26	-.1884
16	0	298.170	10.502	10.468	.32	-.1887
11	1	295.670	10.899	10.899	-.00	-.1585
16	0	295.670	10.925	10.899	.23	-.1585
11	1	293.180	11.270	11.268	.02	-.1389
16	0	293.180	11.290	11.268	.20	-.1389
10	1	293.150	11.297	11.272	.22	-.1387
11	1	288.190	11.895	11.893	.01	-.1142
16	0	288.190	11.909	11.893	.13	-.1142
23	0	283.150	12.408	12.428	-.16	-.0988
11	1	283.200	12.423	12.423	-.00	-.0990
16	0	283.200	12.434	12.423	.09	-.0990
10	1	283.150	12.458	12.428	.24	-.0988
10	1	273.150	13.342	13.315	.20	-.0804
20	3	270.000	13.549	13.562	-.09	-.0764
10	1	263.150	14.089	14.060	.20	-.0694
20	3	260.000	14.261	14.275	-.10	-.0668
23	0	255.372	14.473	14.576	-.71	-.0634
5	0	255.963	14.554	14.538	.11	-.0638
10	1	253.150	14.753	14.715	.26	-.0620
20	3	250.000	14.890	14.908	-.12	-.0601
5	0	247.962	15.050	15.029	.14	-.0590
23	0	241.483	15.344	15.400	-.37	-.0558
5	0	240.700	15.455	15.444	.07	-.0555
20	3	240.000	15.464	15.483	-.12	-.0552
22	1	232.107	15.904	15.906	-.01	-.0521
20	3	230.000	15.997	16.014	-.11	-.0514
5	0	229.917	16.037	16.019	.11	-.0513
22	1	225.698	16.220	16.232	-.08	-.0500
5	0	222.618	16.423	16.385	.23	-.0491
20	3	220.000	16.499	16.512	-.08	-.0484
5	0	214.942	16.754	16.754	.00	-.0471
22	1	212.621	16.836	16.862	-.16	-.0465
20	3	210.000	16.971	16.984	-.07	-.0460
5	0	207.941	17.125	17.078	.28	-.0455
22	1	203.191	17.275	17.292	-.10	-.0446
20	3	200.000	17.429	17.433	-.02	-.0440
5	0	197.888	17.529	17.526	.02	-.0436
22	1	195.723	17.819	17.834	-.08	-.0425
20	3	190.000	17.861	17.865	-.02	-.0424
5	0	188.451	17.941	17.930	.06	-.0422

Table 2. Continued.

ID	WT	T,K	MCL/L	CALCD	PCNT	OBS/DT
22	1	182.415	18.165	18.182	-.09	-.0414
20	3	180.000	18.279	18.282	-.01	-.0411
5	0	176.512	18.446	18.424	.12	-.0407
22	1	171.338	18.621	18.633	-.06	-.0401
20	3	170.000	18.687	18.687	.00	-.0400
5	0	167.366	18.823	18.792	.17	-.0397
21	1	173.150	18.565	18.560	.03	-.0403
21	1	168.150	18.765	18.760	.02	-.0398
21	1	163.150	18.964	18.958	.03	-.0393
12	1	161.360	19.027	19.028	-.01	-.0392
22	1	160.100	19.069	19.078	-.05	-.0391
20	3	160.000	19.086	19.082	.02	-.0391
21	1	158.150	19.158	19.154	.02	-.0389
5	0	156.875	19.226	19.203	.12	-.0388
21	1	153.150	19.354	19.347	.03	-.0386
20	3	150.000	19.475	19.469	.03	-.0383
21	1	148.150	19.547	19.539	.04	-.0382
22	1	146.454	19.591	19.604	-.07	-.0381
21	1	143.150	19.738	19.730	.04	-.0379
20	3	140.000	19.857	19.849	.04	-.0378
21	1	138.150	19.921	19.919	.01	-.0377
20	3	135.000	20.046	20.037	.05	-.0375
21	1	133.150	20.105	20.106	-.01	-.0374
22	1	132.767	20.114	20.121	-.03	-.0374
13	0	133.150	20.126	20.106	.10	-.0374
20	3	130.000	20.232	20.224	.04	-.0373
21	1	128.150	20.291	20.293	-.01	-.0372
13	0	127.594	20.323	20.314	.05	-.0372
20	3	125.000	20.419	20.410	.04	-.0371
21	1	123.150	20.476	20.478	-.01	-.0370
22	1	122.296	20.498	20.510	-.06	-.0370
13	0	122.039	20.521	20.520	.01	-.0370
20	3	120.000	20.602	20.595	.04	-.0369
21	1	118.150	20.662	20.663	-.01	-.0369
13	0	116.483	20.717	20.725	-.04	-.0368
12	1	115.770	20.747	20.751	-.02	-.0368
14	1	115.050	20.772	20.777	-.03	-.0368
20	3	115.000	20.793	20.779	.06	-.0368
21	1	113.150	20.846	20.847	-.01	-.0367
22	1	111.491	20.897	20.908	-.05	-.0367
13	0	110.928	20.915	20.929	-.07	-.0367
20	3	110.000	20.975	20.963	.06	-.0367
14	1	108.110	21.025	21.032	-.03	-.0366
12	1	108.150	21.027	21.031	-.02	-.0366
21	1	108.150	21.028	21.031	-.01	-.0366
13	0	105.372	21.135	21.132	.13	-.0366
20	3	105.000	21.159	21.146	.06	-.0366
21	1	103.150	21.209	21.213	-.02	-.0365
22	1	102.578	21.230	21.234	-.02	-.0365
13	0	99.817	21.298	21.335	-.17	-.0365
14	1	100.020	21.313	21.328	-.07	-.0365
20	3	100.000	21.341	21.328	.06	-.0365
21	1	98.150	21.388	21.396	-.04	-.0365
13	0	94.261	21.490	21.538	-.22	-.0364
21	1	93.150	21.568	21.578	-.05	-.0364
14	1	91.010	21.639	21.656	-.08	-.0364

NP =110, EMSPCT = .080

Table 3. Experimental and calculated saturated vapor densities.
ID: (1) Virial/V. P. Eqns.; (10) Douslin; (11) Sliwinski.

SATURATED VAPOR DENSITIES, E = .35

TTRP = 90.348, TCRT = 305.33, DCRT = 6.8, DGAT = .15153661E-05

1.2[illegible]2348669 .11[illegible]5895 .1371692[illegible]5
-.93[illegible]317935 1.388756298 -.807762749

ID	WT	T,K	MOL/L	CALCD	PCNT	DDS/DT
1	1	90.348	.1518E-05	.1515E-05	.15	.383E-06
1	1	100.000	.1336E-04	.1339E-04	-.21	.270E-05
1	1	110.000	.8160E-04	.8170E-04	-.11	.133E-04
1	1	120.000	.3554E-03	.3553E-03	.04	.473E-04
1	1	130.000	.1197E-02	.1195E-02	.12	.132E-03
1	1	140.000	.3363E-02	.3299E-02	.11	.307E-03
1	1	150.000	.7865E-02	.7810E-02	.06	.620E-03
1	1	160.000	.1631E-01	.1631E-01	.00	.112E-02
1	1	170.000	.3091E-01	.3092E-01	-.05	.185E-02
1	1	180.000	.5413E-01	.5417E-01	-.07	.285E-02
1	1	190.000	.8894E-01	.8900E-01	-.07	.417E-02
1	1	200.000	.1388E+00	.1388E+00	-.05	.586E-02
1	1	210.000	.2075E+00	.2076E+00	-.02	.797E-02
1	1	220.000	.2999E+00	.2999E+00	-.00	.106E-01
1	1	230.000	.4216E+00	.4216E+00	-.00	.139E-01
1	1	240.000	.5799E+00	.5803E+00	-.03	.180E-01
10	1	248.150	.7449E+00	.7432E+00	.23	.222E-01
1	1	250.000	.7847E+00	.7853E+00	-.07	.233E-01
10	1	253.150	.8631E+00	.8618E+00	.16	.253E-01
1	1	260.000	.1051E+01	.1052E+01	-.12	.304E-01
10	1	263.150	.1153E+01	.1152E+01	.10	.331E-01
1	1	270.000	.1401E+01	.1403E+01	-.12	.404E-01
10	1	273.150	.1537E+01	.1536E+01	.04	.446E-01
1	1	280.000	.1880E+01	.1879E+01	.04	.562E-01
10	1	283.150	.2067E+01	.2067E+01	-.00	.634E-01
11	1	283.200	.2069E+01	.2070E+01	-.08	.635E-01
11	1	288.190	.2416E+01	.2423E+01	-.30	.790E-01
10	1	293.150	.2880E+01	.2871E+01	.31	.104E+00
11	1	293.180	.2872E+01	.2874E+01	-.09	.104E+00
11	1	295.670	.3154E+01	.3156E+01	-.06	.124E+00
10	1	298.150	.3502E+01	.3498E+01	.13	.154E+00
11	1	298.170	.3500E+01	.3501E+01	-.01	.154E+00
11	1	300.660	.3941E+01	.3944E+01	-.09	.208E+00
10	1	303.150	.4307E+01	.4297E+01	.24	.271E+00
11	1	303.160	.4294E+01	.4305E+01	-.12	.272E+00
10	1	303.150	.4604E+01	.4603E+01	.02	.349E+00
11	1	303.160	.4605E+01	.4606E+01	-.03	.350E+00
10	1	304.150	.5035E+01	.5024E+01	.21	.523E+00
11	1	304.150	.5020E+01	.5024E+01	-.08	.525E+00
11	1	304.650	.5328E+01	.5334E+01	-.11	.748E+00
11	1	305.150	.5866E+01	.5874E+01	-.13	.177E+01

NP = 41, RMSPCT = .124

Table 4. Experimental and calculated second virial coefficients.

ID: (3) Michels; (6) McGlashan; (10) Douslin

0.552671 -1.106244 -0.592947 -0.041944 0.000000

ID	T,K	T/TC	B*	CALC	DIFF	PCNT
6	150.000	0.4912	-5.183	-5.185	0.002	0.03
6	160.000	0.5240	-4.489	-4.487	-0.001	-0.03
6	170.000	0.5567	-3.935	-3.933	-0.002	-0.04
6	180.000	0.5894	-3.485	-3.483	-0.001	-0.04
6	190.000	0.6222	-3.112	-3.112	-0.001	-0.02
6	200.000	0.6549	-2.800	-2.800	0.000	0.01
6	210.000	0.6877	-2.535	-2.536	0.001	0.04
6	220.000	0.7204	-2.307	-2.309	0.002	0.07
6	230.000	0.7532	-2.110	-2.111	0.002	0.09
6	240.000	0.7859	-1.937	-1.939	0.002	0.10
6	250.000	0.8187	-1.785	-1.786	0.002	0.10
6	260.000	0.8514	-1.650	-1.651	0.001	0.08
6	270.000	0.8842	-1.529	-1.530	0.001	0.05
6	280.000	0.9169	-1.421	-1.421	0.000	0.00
6	290.000	0.9497	-1.323	-1.323	-0.001	-0.06
6	300.000	0.9824	-1.235	-1.233	-0.002	-0.14
3	273.150	0.8945	-1.493	-1.494	0.002	0.12
10	273.150	0.8945	-1.498	-1.494	-0.003	-0.21
3	298.136	0.9763	-1.251	-1.249	-0.002	-0.14
10	298.150	0.9764	-1.252	-1.249	-0.003	-0.26
10	303.150	0.9927	-1.209	-1.207	-0.002	-0.21
3	322.748	1.0569	-1.058	-1.058	-0.000	-0.01
10	323.150	1.0582	-1.056	-1.055	-0.001	-0.14
3	347.652	1.1385	-0.898	-0.900	0.002	0.18
10	348.150	1.1401	-0.896	-0.897	0.001	0.07
3	372.522	1.2199	-0.769	-0.770	0.001	0.13
10	373.150	1.2220	-0.766	-0.767	0.001	0.14
3	397.844	1.3023	-0.659	-0.659	-0.000	-0.02
10	398.150	1.3033	-0.656	-0.657	0.001	0.23
3	422.730	1.3842	-0.566	-0.566	0.000	0.02
10	423.150	1.3857	-0.563	-0.564	0.001	0.12
10	448.150	1.4676	-0.483	-0.484	0.001	0.13
10	473.150	1.5494	-0.415	-0.414	-0.000	-0.09
10	498.150	1.6313	-0.353	-0.353	-0.000	-0.07
10	523.150	1.7132	-0.300	-0.299	-0.001	-0.37
10	548.150	1.7950	-0.251	-0.251	-0.001	-0.30
10	573.150	1.8769	-0.208	-0.208	-0.001	-0.36
10	598.150	1.9588	-0.168	-0.169	0.000	0.10
10	623.150	2.0406	-0.132	-0.134	0.001	1.06

NP = 39, MEANPCT = 0.136

Table 4. Experimental and calculated second virial coefficients (Continued)

ID: (1) Eucken; (2) Lambert; (4) Hoover; (5) Pope; (8) Gunn; (9) Hamann via Dymond/Smith.

ID	T,K	T/TC	B*	CALC	DIFF	PCNT
1	200.000	0.6543	-3.053	-2.800	-0.253	-9.03
2	200.000	0.6543	-3.060	-2.800	-0.260	-9.27
5	209.534	0.6862	-2.485	-2.547	0.063	2.46
1	210.000	0.6877	-2.763	-2.536	-0.227	-8.97
2	210.000	0.6877	-2.763	-2.536	-0.227	-8.97
4	215.000	0.7041	-2.296	-2.418	0.123	5.07
1	220.000	0.7204	-2.494	-2.309	-0.185	-8.02
2	220.000	0.7204	-2.528	-2.309	-0.219	-9.48
1	230.000	0.7532	-2.244	-2.111	-0.133	-6.30
2	230.000	0.7532	-2.298	-2.111	-0.187	-8.85
5	238.769	0.7819	-1.935	-1.959	0.024	1.24
1	240.000	0.7859	-2.056	-1.939	-0.117	-6.03
2	240.000	0.7859	-2.076	-1.939	-0.137	-7.07
4	240.000	0.7859	-1.864	-1.939	0.075	3.88
1	250.000	0.8187	-1.887	-1.786	-0.101	-5.64
2	250.000	0.8187	-1.907	-1.786	-0.121	-6.77
5	254.807	0.8344	-1.700	-1.719	0.019	1.11
1	260.000	0.8514	-1.725	-1.651	-0.074	-4.51
2	260.000	0.8514	-1.752	-1.651	-0.101	-6.14
1	270.000	0.8842	-1.584	-1.530	-0.054	-3.53
2	270.000	0.8842	-1.618	-1.530	-0.088	-5.73
4	273.150	0.8945	-1.506	-1.494	-0.011	-0.76
5	273.150	0.8945	-1.479	-1.494	0.016	1.06
8	273.200	0.8947	-1.498	-1.494	-0.004	-0.25
1	280.000	0.9169	-1.442	-1.421	-0.021	-1.50
2	280.000	0.9169	-1.483	-1.421	-0.062	-4.35
2	290.000	0.9497	-1.382	-1.323	-0.059	-4.47
8	298.200	0.9765	-1.260	-1.249	-0.011	-0.89
2	300.000	0.9824	-1.281	-1.233	-0.047	-3.85
5	306.062	1.0023	-1.181	-1.183	0.002	0.13
9	310.940	1.0182	-1.111	-1.144	0.033	2.87
8	323.200	1.0584	-1.062	-1.054	-0.007	-0.68
9	344.270	1.1274	-0.913	-0.920	0.006	0.68
9	377.600	1.2365	-0.741	-0.746	0.004	0.60
5	377.600	1.2365	-0.737	-0.746	0.009	1.14
8	410.900	1.3456	-0.604	-0.608	0.004	0.67
9	410.940	1.3457	-0.609	-0.608	-0.001	-0.24
9	444.270	1.4549	-0.500	-0.496	-0.004	-0.91
8	444.300	1.4550	-0.499	-0.496	-0.003	-0.65
9	477.600	1.5640	-0.404	-0.403	-0.001	-0.27
8	477.600	1.5640	-0.415	-0.403	-0.013	-3.11
8	510.900	1.6731	-0.344	-0.325	-0.019	-5.92
9	510.940	1.6732	-0.319	-0.324	0.005	1.53

Table 5. Experimental and calculated third virial coefficients.

ID: (7) Chueh; (10) Douslin; (4) Hoover; (5) Pope

217.800 0.244226 0.832529 0.534875 0.000000

ID	T,K	T/TCRT	C*	CALCD	DIFF
7	210.000	0.6877	-0.241	-0.237	-0.004
7	220.000	0.7204	0.053	0.053	0.000
7	230.000	0.7532	0.239	0.238	0.002
7	240.000	0.7859	0.353	0.352	0.001
7	250.000	0.8187	0.419	0.421	-0.002
7	260.000	0.8514	0.454	0.460	-0.005
10	273.150	0.8945	0.471	0.480	-0.010
10	298.150	0.9764	0.482	0.471	0.011
10	303.150	0.9927	0.472	0.465	0.007
10	323.150	1.0582	0.438	0.436	0.003
10	348.150	1.1401	0.393	0.395	-0.001
10	373.150	1.2220	0.351	0.355	-0.004
10	398.150	1.3038	0.316	0.319	-0.003
10	423.150	1.3857	0.284	0.288	-0.004
10	448.150	1.4676	0.258	0.261	-0.003
10	473.150	1.5494	0.240	0.238	0.002
10	498.150	1.6313	0.220	0.218	0.002
10	523.150	1.7132	0.204	0.201	0.003
10	548.150	1.7950	0.188	0.186	0.002
10	573.150	1.8769	0.175	0.173	0.002
10	598.150	1.9588	0.161	0.162	-0.001
10	623.150	2.0406	0.149	0.151	-0.003

NP = 22, MEANDIFF = 0.003

ID	T,K	T/TCRT	C*	CALCD	DIFF
5	209.534	0.6862	-2.667	-0.254	-2.412
4	215.000	0.7041	-3.230	-0.076	-3.154
5	238.769	0.7819	0.168	0.341	-0.173
4	240.000	0.7859	-0.117	0.352	-0.469
5	254.807	0.8344	0.386	0.443	-0.056
5	273.150	0.8945	0.471	0.480	-0.010
4	273.150	0.8945	0.482	0.480	0.002
4	273.150	0.8945	0.517	0.480	0.036
4	298.138	0.9763	0.488	0.471	0.017
5	306.062	1.0023	0.456	0.461	-0.006
4	322.748	1.0569	0.439	0.436	0.003
4	347.852	1.1385	0.390	0.395	-0.006
4	372.522	1.2199	0.350	0.356	-0.006
4	397.844	1.3028	0.318	0.320	-0.002
4	422.700	1.3842	0.290	0.289	0.001

Table 6. Summary of P-ρ-T Data

ID	Authors	mol/ℓ	T, K	P, bar	N	Deviations, percent Δd/d	ΔP/P
2	Virial equation	0.4	230 - 600	7 - 20	38	0.03	0.02
8	Reamer et al. [64]	0 - 15	310 - 510	50 - 700	176	0.57	1.07
9	Michels et al. [54]	0.9 - 8	273 - 423	15 - 220	101	0.37	0.13
10	Douslin et al. [18]	0.7 - 16	248 - 623	12 - 410	298	0.43	0.32
16	Tomlinson [85]	4 - 13	280 - 325	43 - 138	61	1.97	1.26
*	A. K. Pal [61]	14 - 19	157 - 320	19 - 700	125	0.11	3.68
*	Straty et al. [79]	11 - 22	93 - 320	5 - 360	430	0.09	2.66

* See Table 12.

Table 7. Coefficients of the equation of state.

DTRP = 21.6800, TTRP = 90.348, PTRP = .113084262E-04
DCRT = 6.8000, TCRT = 305.330, PCRT = 48.714015779

AL = 1.00, BB = 0.00, BE = 0.00
GA = 0.00, DE = .67, EP = 0.00

.48752227313 .33198750982 .06854249828
-.43113918548 0.00000000000 .03779460468

MOL/L	TSAT	THETA	PSAT	B	C
.5	235.272	218.077	8.331	.512	-.769
1.0	258.253	243.403	16.344	.538	-.680
1.5	272.322	260.290	23.393	.564	-.595
2.0	282.069	272.756	29.430	.591	-.515
2.5	289.139	282.245	34.485	.619	-.440
3.0	294.345	289.483	38.613	.647	-.369
3.5	298.166	294.932	41.888	.677	-.304
4.0	300.922	298.923	44.393	.707	-.243
4.5	302.842	301.725	46.220	.737	-.188
5.0	304.103	303.565	47.461	.769	-.137
5.5	304.850	304.646	48.216	.801	-.093
6.0	305.212	305.165	48.591	.834	-.053
6.5	305.323	305.321	48.707	.867	-.018
7.0	305.329	305.328	48.713	.902	.011
7.5	305.271	305.239	48.651	.937	.036
8.0	305.036	304.876	48.408	.973	.055
8.5	304.513	304.059	47.874	1.010	.070
9.0	303.612	302.632	46.973	1.047	.080
9.5	302.260	300.460	45.658	1.085	.086
10.0	300.403	297.430	43.912	1.124	.087
10.5	298.000	293.454	41.741	1.164	.085
11.0	295.021	288.460	39.176	1.204	.078
11.5	291.441	282.400	36.265	1.245	.069
12.0	287.243	275.242	33.069	1.287	.056
12.5	282.411	266.975	29.661	1.329	.041
13.0	276.935	257.609	26.123	1.373	.024
13.5	270.805	247.178	22.542	1.417	.004
14.0	264.014	235.736	19.010	1.462	-.017
14.5	256.562	223.364	15.616	1.507	-.039
15.0	248.450	210.164	12.446	1.553	-.061
15.5	239.686	196.263	9.577	1.600	-.084
16.0	230.281	181.808	7.071	1.648	-.106
16.5	220.258	166.965	4.969	1.697	-.127
17.0	209.643	151.913	3.291	1.746	-.146
17.5	198.472	136.841	2.027	1.796	-.163
18.0	186.788	121.942	1.142	1.847	-.177
18.5	174.641	107.405	.574	1.898	-.188
19.0	162.085	93.407	.250	1.950	-.194
19.5	149.179	80.111	.090	2.003	-.195
20.0	135.987	67.658	.025	2.057	-.190
20.5	122.569	56.160	.005	2.111	-.179
21.0	108.985	45.702	.001	2.166	-.161
21.5	95.293	36.336	.000	2.222	-.134
22.0	81.546	28.086	.000	2.279	-.098

Table 8. Experimental and calculated ideal gas functions.

IDEAL GAS FUNCTIONS FOR ETHANE, IN JOULES, MOLES, KELVINS

T,K	HZ	CALC	PCNT	SZ	CALC	PCNT	CPZ	CALC	PCNT
50.00	1663.77	1663.77	0.00	160.12	160.18	0.04	33.39	33.09	-0.90
100.00	3381.51	3381.50	-0.00	183.84	183.88	0.02	35.65	35.73	0.24
150.00	5239.20	5239.29	0.00	198.87	198.91	0.02	38.66	38.64	-0.06
200.00	7257.57	7257.41	-0.00	210.50	210.50	0.00	42.26	42.26	0.00
273.15	10601.17	10600.97	-0.00	224.68	224.69	0.00	49.54	49.53	-0.01
298.15	11875.82	11875.64	-0.00	229.12	229.15	0.01	52.47	52.47	0.01
300.00	11972.10	11972.91	0.01	229.45	229.47	0.01	52.72	52.69	-0.04
400.00	17875.72	17875.11	-0.00	246.35	246.37	0.00	65.48	65.48	0.00
500.00	25057.96	25058.40	0.00	262.34	262.34	0.00	77.99	78.00	0.02
600.00	33431.00	33431.55	0.00	277.57	277.58	0.00	89.24	89.23	-0.02
700.00	42862.99	42862.23	-0.00	292.09	292.10	0.00	99.20	99.19	-0.01
800.00	53230.52	53231.87	0.00	305.89	305.93	0.01	107.99	108.01	0.02
900.00	64425.65	64426.01	0.00	319.07	319.10	0.01	115.77	115.70	-0.06
1000.00	76353.82	76354.94	0.00	331.62	331.67	0.01	122.59	122.97	0.31

Table 9. Interpolated ideal gas functions.

ETHANE IDEAL GAS FUNCTIONS, JOULES,MOLES,KELVINS

T,K	EZ	HZ	SZ	CVZ	CPZ
80	2279.7	3027.0	180.190	26.86	35.17
100	2550.1	3381.5	183.284	27.42	35.73
110	2827.0	3741.6	187.316	27.98	36.29
120	3109.6	4107.4	190.498	28.54	36.86
130	3397.9	4478.8	193.471	29.12	37.43
140	3692.0	4856.0	196.266	29.71	38.02
150	3992.1	5239.3	198.910	30.32	38.64
160	4298.1	5628.8	201.424	30.97	39.28
170	4611.6	6025.1	203.826	31.65	39.96
180	4931.7	6428.3	206.131	32.37	40.69
190	5259.2	6838.9	208.351	33.14	41.45
200	5594.6	7257.4	210.497	33.95	42.25
210	5938.2	7684.3	212.579	34.80	43.12
220	6290.7	8119.9	214.606	35.70	44.02
230	6652.5	8564.5	216.583	36.65	44.97
240	7023.9	9018.4	218.513	37.64	45.96
250	7405.5	9484.1	220.415	38.68	46.99
260	7797.6	9959.3	222.279	39.75	48.07
270	8200.8	10445.5	224.113	40.86	49.18
280	8614.9	10943.0	225.922	42.01	50.32
290	9040.4	11452.0	227.708	43.18	51.49
300	9478.6	11972.9	229.474	44.38	52.69
310	9928.5	12506.0	231.222	45.61	53.92
320	10390.8	13051.4	232.954	46.85	55.17
330	10865.7	13609.3	234.670	48.11	56.43
340	11353.1	14180.0	236.374	49.39	57.70
350	11853.4	14763.4	238.065	50.68	58.99
360	12366.8	15359.8	239.745	51.97	60.28
370	12892.8	15969.1	241.414	53.27	61.58
380	13432.0	16591.4	243.074	54.57	62.88
390	13984.2	17226.8	244.724	55.87	64.18
400	14549.4	17875.1	246.366	57.17	65.48
410	15127.5	18536.4	247.998	58.46	66.78
420	15718.6	19210.5	249.623	59.75	68.07
430	16322.5	19897.7	251.240	61.03	69.35
440	16939.2	20597.5	252.849	62.30	70.62
450	17568.5	21310.0	254.450	63.56	71.88
460	18210.5	22035.0	256.043	64.81	73.13
470	18864.8	22772.5	257.629	66.05	74.37
480	19531.5	23522.3	259.208	67.28	75.59
490	20210.3	24284.4	260.779	68.49	76.81
500	20901.3	25058.4	262.343	69.69	78.00
510	21604.1	25844.4	263.899	70.87	79.19
520	22318.7	26642.1	265.448	72.05	80.36
530	23045.0	27451.5	266.990	73.20	81.52
540	23782.7	28272.4	268.524	74.35	82.66
550	24531.9	29104.7	270.051	75.47	83.79
560	25292.2	29948.2	271.571	76.59	84.90
570	26063.6	30802.7	273.084	77.69	86.01
580	26845.9	31668.2	274.589	78.78	87.09
590	27639.1	32544.5	276.087	79.85	88.17
600	28443.0	33431.5	277.578	80.92	89.23

Table 10. Experimental and calculated heats of vaporization. ID: (10) Douslin; (11) Wiebe; (13) Riedel via Furtado; (20) Furtado.

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 .12857784E+02    .54095302E+01    .33835851E+02
-.97520486E+02    .10084976E+03   -.37933878E+02
```

ID	T,K	KJ/MOL	CALCD	PCNT
10	248.15	11.299	11.235	.57
10	253.15	10.925	10.863	.57
10	263.15	10.072	10.039	.32
10	273.15	9.073	9.072	.01
10	283.15	7.844	7.877	-.43
10	293.15	6.170	6.252	-1.32
10	298.15	5.034	5.090	-1.10
10	302.15	3.677	3.710	-.90
10	303.15	3.207	3.210	-.07
10	304.15	2.548	2.544	.16
13	100.00	17.154	17.311	-.91
13	111.11	16.928	17.068	-.82
13	133.33	16.455	16.493	-.23
13	155.56	15.853	15.797	.35
13	166.67	15.480	15.403	.50
13	180.00	14.957	14.886	.48
12	184.10	14.706	14.716	-.07
13	184.11	14.802	14.716	.59
13	190.00	14.526	14.464	.43
13	200.00	14.049	14.012	.27
13	210.00	13.530	13.524	.04
13	220.00	12.999	12.998	.01
13	230.00	12.388	12.425	-.30
13	240.00	11.743	11.797	-.46
13	250.00	11.044	11.100	-.50
13	260.00	10.287	10.312	-.24
13	270.00	9.416	9.396	.22
13	280.00	8.353	8.286	.81
13	290.00	6.863	6.835	.42
13	300.00	4.557	4.532	.55
20	100.00	17.544	17.311	1.34
20	111.11	17.117	17.068	.28
20	133.33	16.497	16.493	.03
20	155.56	15.761	15.797	-.23
20	166.67	15.351	15.403	-.34
20	180.00	14.832	14.886	-.36
20	184.11	14.677	14.716	-.27
20	190.00	14.422	14.464	-.30
20	200.00	13.953	14.012	-.42
20	210.00	13.488	13.524	-.27
20	220.00	12.999	12.998	.01
20	230.00	12.434	12.425	.07
20	240.00	11.814	11.797	.15
20	250.00	11.065	11.100	-.31
20	260.00	10.287	10.312	-.24
20	270.00	9.416	9.396	.22
20	280.00	8.249	8.286	-.46
20	290.00	6.863	6.835	.42
20	300.00	4.612	4.532	1.76
11	190.00	13.777	14.464	-4.75
11	195.00	13.635	14.242	-4.26
11	200.00	13.501	14.012	-3.64
11	205.00	13.338	13.772	-3.16
11	210.00	13.179	13.524	-2.56
11	215.00	12.999	13.266	-2.02
11	220.00	12.806	12.998	-1.47
11	225.00	12.584	12.717	-1.05
11	230.00	12.362	12.425	-.50
11	235.00	12.111	12.119	-.06
11	240.00	11.844	11.797	.39
11	245.00	11.551	11.458	.81
11	250.00	11.233	11.100	1.19
11	255.00	10.881	10.719	1.51
11	260.00	10.492	10.312	1.75
11	265.00	10.036	9.873	1.65
11	270.00	9.584	9.396	2.00
11	275.00	9.002	8.872	1.47
11	280.00	8.429	8.286	1.72
11	285.00	7.700	7.619	1.06
11	290.00	6.834	6.835	-.01
11	295.00	5.779	5.865	-1.45
11	300.00	4.294	4.532	-5.26

NP = 49, RMSPCT = .56

NP = 72, RMSPCT = 1.41

Table 11. Calculated P(ρ) critical isotherm.

The following page gives a high-resolution examination of the critical isotherm of ethane as computed by equation of state (5). Column headings have the following interpretations--

D/DC ≡ d/d_c, density reduced at the critical point.
TS/TC ≡ $T_\sigma(\rho)/T_c$, reduced coexistence temperature.
PS/PC ≡ $P_\sigma(\rho)/P_c$, reduced coexistence pressure.
P/PC ≡ P/P_c, pressure reduced at the critical point.
DP/DR ≡ $\partial P/\partial\rho$ slope of the critical isotherm, bar.*

The last five columns give the density-dependence of functions used in the equation of state, where R ≡ ρ ≡ d/d_t is density reduced at the liquid triple point--

DTS/DR ≡ $dT_\sigma(\rho)/d\rho$, K.
DTH/DR ≡ $d\theta(\rho)/d\rho$, K.
DPS/DR ≡ $dP_\sigma(\rho)/d\rho$, bar.
DXB/DR ≡ $\partial\Phi(\rho,T)/\partial\rho$.
DXC/DR ≡ $\partial\Psi(\rho,T)/\partial\rho$.

*Note: ρ ≡ d/d_t, density reduced at the liquid triple-point.

Table 11. Calculated P(ρ) critical isotherm.

TC = 305.33, DC = 6.80, PC = 48.7140158. AT THE C.P., DPS/DT = 1.06746, DP/DT = 1.06746

D/DC	TS/TC	PS/PC	P/PC	DP/DR	DTS/DR	DTH/DR	DPS/DR	DXB/DR	DXC/DR
.75	.9965902349	.9781179128	.9947198221	12.970959346	38.22903	55.50643	38.43027	-.12563	.28280
.76	.9969683884	.9805045040	.9955077542	11.521992126	35.41207	51.34955	35.71650	-.11633	.26660
.77	.9973181371	.9827190111	.9962058228	10.179076181	32.69865	47.34807	33.08511	-.10738	.25064
.78	.9976405397	.9847667727	.9968207566	8.939108406	30.08786	43.50156	30.53719	-.09878	.23493
.79	.9979366471	.9866532040	.9973590823	7.798909816	27.57908	39.80981	28.07403	-.09051	.21947
.80	.9982075052	.9883838069	.9978271190	6.755218175	25.17195	36.27283	25.69705	-.08259	.20427
.81	.9984541574	.9899641807	.9982309731	5.804679555	22.86639	32.89088	23.40785	-.07501	.18934
.82	.9986776479	.9914000342	.9985765317	4.943838901	20.66258	29.66446	21.20822	-.06776	.17469
.83	.9988790240	.9926971975	.9988694560	4.169129707	18.56097	26.59431	19.10015	-.06086	.16035
.84	.9990593391	.9938616350	.9991151736	3.476862978	16.56230	23.68142	17.08582	-.05430	.14632
.85	.9992196555	.9948994578	.9993188705	2.863215748	14.66756	20.92700	15.16762	-.04808	.13264
.86	.9993610472	.9958169363	.9994854816	2.324219492	12.87801	18.33252	13.34811	-.04220	.11932
.87	.9994846021	.9966205149	.9996196815	1.855748905	11.19516	15.89966	11.63007	-.03668	.10641
.88	.9995914250	.9973168194	.9997258741	1.453511627	9.62072	13.63032	10.01644	-.03152	.09393
.89	.9996826396	.9979126713	.9998081807	1.113039672	8.15665	11.52656	8.51032	-.02672	.08193
.90	.9997593901	.9984150980	.9998704293	.829683418	6.80504	9.59060	7.11494	-.02229	.07045
.91	.9998223432	.9988313342	.9999161440	.598609241	5.56814	7.82478	5.83362	-.01824	.05953
.92	.9998742769	.9991694085	.9999485642	.414587929	4.44625	6.22949	4.66761	-.01456	.04923
.93	.9999147121	.9994357189	.9999704860	.272908921	3.44599	4.81141	3.62472	-.01129	.03964
.94	.9999454946	.9996388544	.9999844968	.167960184	2.56754	3.57078	2.70601	-.00841	.03081
.95	.9999678882	.9997869185	.9999927858	.094264983	1.81324	2.50997	1.91476	-.00594	.02282
.96	.9999831801	.9998882239	.9999971867	.046253664	1.18537	1.63130	1.25420	-.00388	.01577
.97	.9999926814	.9999512908	.9999991726	.018315390	.68629	.93713	.72758	-.00225	.00976
.98	.9999977285	.9999848585	.9999998560	.004869238	.31868	.43016	.33855	-.00104	.00495
.99	.9999997226	.9999981479	.9999999941	.000431812	.08058	.10845	.08580	-.00026	.00144
1.00	1.0000000000	1.0000000000	1.0000000000	.000000000	.00000	.00000	.00000	-.00000	0.00000
1.01	.9999999022	.9999993463	1.0000000041	.000323131	-.03503	-.06290	-.03732	.00011	-.00065
1.02	.9999985624	.9999904122	1.0000001556	.005134629	-.21006	-.32155	-.22330	.00069	-.00332
1.03	.9999951502	.9999677021	1.0000008676	.019019273	-.47228	-.72312	-.50110	.00155	-.00683
1.04	.9999885115	.9999235966	1.0000029276	.048049501	-.83872	-1.28465	-.88828	.00275	-.01134
1.05	.9999775796	.9998510988	1.0000075109	.098542663	-1.30872	-2.00546	-1.38357	.00429	-.01674
1.06	.9999611909	.9997426058	1.0000162599	.177600694	-1.88484	-2.88811	-1.98906	.00617	-.02298
1.07	.9999384452	.9995922991	1.0000311609	.291754498	-2.56048	-3.92596	-2.69721	.00839	-.02992
1.08	.9999082405	.9993930601	1.0000547469	.448637577	-3.33686	-5.12021	-3.50869	.01093	-.03754
1.09	.9998695484	.9991382992	1.0000900162	.655979199	-4.21267	-6.46951	-4.42150	.01380	-.04576
1.10	.9998213549	.9988215614	1.0001404745	.921810526	-5.18647	-7.97235	-5.43346	.01699	-.05455
1.11	.9997626614	.9984365367	1.0002101544	1.254453592	-6.25669	-9.62711	-6.54225	.02050	-.06386
1.12	.9996924858	.9979770700	1.0003036330	1.662511814	-7.42164	-11.43201	-7.74538	.02431	-.07363
1.13	.9996098641	.9974371699	1.0004260503	2.154861551	-8.67955	-13.38517	-9.04025	.02844	-.08383
1.14	.9995138510	.9968110179	1.0005831265	2.740644398	-10.02852	-15.48461	-10.42410	.03286	-.09443
1.15	.9994035211	.9960929757	1.0007811788	3.429260048	-11.46661	-17.72822	-11.89409	.03758	-.10538
1.16	.9992779693	.9952775930	1.0010271374	4.230359607	-12.99177	-20.11384	-13.44723	.04258	-.11665
1.17	.9991363118	.9943596134	1.0013285623	5.153839290	-14.60192	-22.63918	-15.08047	.04786	-.12821
1.18	.9989776864	.9933339802	1.0016936580	6.209834481	-16.29492	-25.30194	-16.79067	.05342	-.14002
1.19	.9988012533	.9921958419	1.0021312893	7.408714105	-18.06859	-28.09971	-18.57460	.05925	-.15206
1.20	.9986061951	.9909405561	1.0026509961	8.761075340	-19.92073	-31.03005	-20.42899	.06533	-.16430
1.21	.9983917172	.9895636935	1.0032630077	10.277738641	-21.84910	-34.09049	-22.35050	.07167	-.17672
1.22	.9981570477	.9880610404	1.0039782572	11.969743083	-23.85148	-37.27848	-24.33577	.07826	-.18928
1.23	.9979014382	.9864286014	1.0048083953	13.848342038	-25.92562	-40.59149	-26.38139	.08509	-.20197
1.24	.9976241629	.9846626010	1.0057658042	15.924999171	-28.06928	-44.02695	-28.48393	.09215	-.21476
.25	.9973245189	.9827594849	1.0068636107	18.211384770	-30.28025	-47.58227	-30.63995	.09944	-.22763

Table 12. Experimental and calculated P-ρ-T data

The following pages compare experimental P-ρ-T (compressibility) data with densities and pressures computed by the equation of state (5). The first column identifies sources of the data (as in Table 6):

ID	Authors	Reference
2	Virial equation	This report
8	Reamer et al.	[64]
9	Michels et al.	[54]
10	Douslin and Harrison	[18]
16	Tomlinson	[85]
*	A. K. Pal, via Pope	[61]
*	Straty et al.	[79]

Data of Reamer et al. and of Tomlinson were not used for adjusting the equation of state. Pressure deviations for compressed liquid at low temperatures are not significant because $(\partial P/\partial \rho)$ is extremely large.

*Note: Data of A. K. Pal are identified by ID = 1201 through 2414 in uniform sequence. Data of Straty and Tsumura begin with ID = 3501. Their data at densities below 11.0 mol/ℓ have been omitted.

Table 12. Experimental and calculated P-ρ-T data.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
2	230.000	.4000	.4001	-.02	6.697	6.696	.02
2	240.000	.4000	.4001	-.03	7.073	7.071	.03
2	250.000	.4000	.4002	-.05	7.445	7.442	.04
2	260.000	.4000	.4002	-.06	7.814	7.810	.05
2	270.000	.4000	.4002	-.06	8.179	8.175	.05
2	280.000	.4000	.4002	-.06	8.543	8.538	.05
2	290.000	.4000	.4002	-.06	8.904	8.899	.05
2	300.000	.4000	.4002	-.05	9.264	9.259	.05
2	310.000	.4000	.4002	-.05	9.622	9.617	.05
2	320.000	.4000	.4002	-.04	9.979	9.975	.04
2	330.000	.4000	.4002	-.04	10.335	10.331	.04
2	340.000	.4000	.4001	-.03	10.690	10.686	.03
2	350.000	.4000	.4001	-.03	11.044	11.041	.03
2	360.000	.4000	.4001	-.02	11.397	11.394	.02
2	370.000	.4000	.4001	-.02	11.751	11.748	.02
2	380.000	.4000	.4001	-.02	12.102	12.100	.02
2	390.000	.4000	.4001	-.01	12.454	12.452	.01
2	400.000	.4000	.4000	-.01	12.805	12.803	.01
2	410.000	.4000	.4000	-.01	13.155	13.154	.01
2	420.000	.4000	.4000	-.01	13.506	13.505	.01
2	430.000	.4000	.4000	-.00	13.856	13.855	.00
2	440.000	.4000	.4000	-.00	14.205	14.205	.00
2	450.000	.4000	.4000	-.00	14.555	14.554	.00
2	460.000	.4000	.4000	-.00	14.904	14.904	.00
2	470.000	.4000	.4000	0.00	15.252	15.252	.00
2	480.000	.4000	.4000	0.00	15.601	15.601	-.00
2	490.000	.4000	.4000	0.00	15.949	15.949	-.00
2	500.000	.4000	.4000	-.00	16.297	16.297	.00
2	510.000	.4000	.4000	-.00	16.645	16.645	.00
2	520.000	.4000	.4000	-.00	16.993	16.993	.00
2	530.000	.4000	.4000	-.00	17.340	17.340	.00
2	540.000	.4000	.4000	-.00	17.688	17.687	.00
2	550.000	.4000	.4000	-.00	18.035	18.034	.00
2	560.000	.4000	.4000	-.01	18.382	18.381	.01
2	570.000	.4000	.4000	-.01	18.729	18.728	.01
2	580.000	.4000	.4000	-.01	19.076	19.074	.01
2	590.000	.4000	.4000	-.01	19.423	19.421	.01
2	600.000	.4000	.4001	-.01	19.769	19.767	.01

NP = 38, DNRMSPCT = .028, PMEANPCT = .018

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
8	310.928	3.5245	3.5624	-1.08	48.263	48.084	.37
8	310.928	4.5621	4.5926	-2.01	51.711	51.498	.41
8	310.928	5.5178	5.6402	-2.22	53.434	53.283	.28
8	310.928	7.2697	7.2149	.75	55.158	55.223	-.12
8	310.928	8.3632	8.1609	2.42	56.537	56.956	-.74
8	310.928	8.8480	8.7290	1.35	57.916	58.301	-.66
8	310.928	9.1894	9.1069	.90	59.295	59.663	-.62
8	310.928	9.4447	9.3883	.60	60.674	60.994	-.53
8	310.928	9.6593	9.6131	.48	62.053	62.372	-.51
8	310.928	9.8423	9.8611	.42	63.432	63.766	-.53
8	310.928	9.9921	9.9628	.29	64.811	65.081	-.42
8	310.928	10.1321	10.1054	.26	66.190	66.466	-.42
8	310.928	10.2579	10.2330	.24	67.569	67.854	-.42
8	344.261	4.9251	4.9622	-.75	75.842	75.553	.38
8	344.261	5.8407	5.8642	-.40	82.737	82.557	.22
8	344.261	6.7517	6.7262	.38	89.632	89.849	-.24
8	344.261	7.5579	7.4961	.90	96.527	97.190	-.69
8	344.261	8.2287	8.1448	1.02	103.421	104.400	-.95
8	344.261	8.7434	8.6913	.60	110.316	111.046	-.66
8	344.261	9.1754	9.1453	.33	117.211	117.714	-.43
8	344.261	9.5504	9.5267	.25	124.106	124.572	-.38
8	344.261	9.8679	9.8525	.16	131.000	131.353	-.27
8	310.928	.5889	.5908	-.31	13.790	13.752	.28
8	344.261	.5165	.5171	-.12	13.790	13.774	.11
8	377.594	.4620	.4621	-.04	13.790	13.784	.04
8	410.928	.4189	.4190	-.02	13.790	13.787	.02
8	444.261	.3838	.3838	-.02	13.790	13.787	.02
8	477.594	.3544	.3546	-.04	13.790	13.784	.04
8	510.928	.3295	.3297	-.08	13.790	13.779	.08
8	310.928	1.3468	1.3533	-.48	27.579	27.480	.36
8	344.261	1.1212	1.1230	-.17	27.579	27.540	.14
8	377.594	.9762	.9766	-.04	27.579	27.570	.03
8	410.928	.8711	.8708	.03	27.579	27.586	-.02
8	444.261	.7892	.7892	-.01	27.579	27.577	.01
8	477.594	.7233	.7236	-.04	27.579	27.569	.04
8	510.928	.6684	.6692	-.12	27.579	27.547	.12
8	310.928	2.4961	2.5124	-.65	41.369	41.225	.35
8	344.261	1.8567	1.8611	-.23	41.369	41.296	.17
8	377.594	1.5546	1.5562	-.10	41.369	41.334	.08
8	410.928	1.3605	1.3599	.04	41.369	41.384	-.04
8	444.261	1.2172	1.2175	-.02	41.369	41.360	.02
8	477.594	1.1066	1.1072	-.05	41.369	41.348	.05
8	510.928	1.0165	1.0183	-.17	41.369	41.301	.16
8	310.928	7.2697	7.2149	.75	55.158	55.223	-.12
8	344.261	2.8016	2.8123	-.38	55.158	55.026	.24
8	377.594	2.2138	2.2172	-.19	55.158	55.077	.15
8	410.928	1.8902	1.8961	-.00	55.158	55.160	-.00
8	444.261	1.6685	1.6693	-.05	55.158	55.135	.04
8	477.594	1.5040	1.5052	-.08	55.158	55.117	.07
8	510.928	1.3733	1.3763	-.22	55.158	55.044	.21
8	310.928	10.3736	10.3488	.24	68.948	69.260	-.45
8	344.261	4.0959	4.1267	-.75	68.948	68.673	.40

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
8	377.594	2.9702	2.9783	-.27	68.948	68.811	.20
8	410.928	2.4628	2.4648	-.08	68.948	68.900	.07
8	444.261	2.1426	2.1446	-.10	68.948	68.893	.08
8	477.594	1.9142	1.9167	-.13	68.948	68.863	.12
8	510.928	1.7377	1.7424	-.27	68.948	68.773	.25
8	310.928	11.2820	11.2977	-.14	86.184	85.794	.45
8	344.261	6.3137	6.3059	.12	86.184	86.247	-.07
8	377.594	4.0652	4.0857	-.50	86.184	85.887	.35
8	410.928	3.2373	3.2463	-.28	86.184	85.993	.22
8	444.261	2.7645	2.7702	-.20	86.184	86.032	.18
8	477.594	2.4431	2.4483	-.21	86.184	86.018	.19
8	510.928	2.2026	2.2098	-.32	86.184	85.930	.30
8	310.928	11.8116	11.8662	-.46	103.421	101.479	1.88
8	344.261	8.2287	8.1448	1.02	103.421	104.400	-.95
8	377.594	5.2776	5.3091	-.60	103.421	102.980	.43
8	410.928	4.0686	4.0855	-.42	103.421	103.081	.33
8	444.261	3.4145	3.4245	-.29	103.421	103.162	.25
8	477.594	2.9861	2.9951	-.30	103.421	103.142	.27
8	510.928	2.6754	2.6854	-.37	103.421	103.061	.35
8	310.928	12.2182	12.2845	-.54	120.658	117.630	2.51
8	344.261	9.3676	9.3439	.25	120.658	121.089	-.36
8	377.594	6.4713	6.4817	-.16	120.658	120.495	.14
8	410.928	4.9220	4.9472	-.51	120.658	120.151	.42
8	444.261	4.0781	4.0951	-.42	120.658	120.222	.36
8	477.594	3.5369	3.5509	-.39	120.658	120.228	.36
8	510.928	3.1538	3.1653	-.37	120.658	120.245	.34
8	310.928	12.5479	12.6198	-.57	137.895	133.916	2.89
8	344.261	10.1360	10.1356	.00	137.895	137.905	-.01
8	377.594	7.5147	7.4916	.31	137.895	138.338	-.32
8	410.928	5.7575	5.7811	-.41	137.895	137.391	.37
8	444.261	4.7394	4.7638	-.52	137.895	137.259	.46
8	477.594	4.0684	4.1073	-.46	137.895	137.306	.43
8	510.928	3.6322	3.6452	-.36	137.895	137.426	.34
8	310.928	12.8333	12.9019	-.53	155.132	150.695	2.86
8	344.261	10.6669	10.7116	-.42	155.132	153.616	.98
8	377.594	8.3540	8.3304	.28	155.132	155.669	-.35
8	410.928	6.5294	6.5476	-.28	155.132	154.701	.28
8	444.261	5.3796	5.4107	-.58	155.132	154.284	.55
8	477.594	4.6299	4.6548	-.54	155.132	154.338	.51
8	510.928	4.1041	4.1198	-.38	155.132	154.558	.37
8	310.928	13.0738	13.1466	-.56	172.369	167.306	3.11
8	344.261	11.0985	11.1630	-.58	172.369	169.671	1.57
8	377.594	9.0258	9.0157	.11	172.369	172.653	-.16
8	410.928	7.2289	7.2346	-.08	172.369	172.219	.09
8	444.261	5.9919	6.0200	-.47	172.369	171.545	.48
8	477.594	5.1560	5.1844	-.55	172.369	171.425	.55
8	510.928	4.5658	4.5839	-.40	172.369	171.687	.40
8	310.928	13.2869	13.3634	-.58	189.606	183.308	3.32
8	344.261	11.4646	11.5346	-.61	189.606	186.124	1.84
8	377.594	9.5652	9.5771	-.12	189.606	189.203	.21
8	410.928	7.8461	7.8460	.00	189.606	189.639	-.00
8	444.261	6.5583	6.5840	-.39	189.606	188.786	.43
8	477.594	5.6568	5.6888	-.57	189.606	188.483	.59

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
8	510.928	5.0133	5.0329	-.39	189.606	188.840	.40
8	310.928	13.4768	13.5585	-.61	206.843	199.414	3.59
8	344.261	11.781[illegible]	11.8569	-.59	206.843	202.812	1.95
8	377.594	10.0144	10.0452	-.31	206.843	205.615	.59
8	410.928	8.3875	8.3867	.01	206.843	206.867	-.01
8	444.261	7.0812	7.1024	-.30	206.843	206.110	.35
8	477.594	6.1325	6.1639	-.51	206.843	205.669	.57
8	510.928	5.4446	5.4633	-.34	206.843	206.077	.37
8	310.928	13.8169	13.8999	-.60	241.316	232.393	3.70
8	344.261	12.3150	12.3717	-.46	241.316	237.154	1.72
8	377.594	10.7385	10.7890	-.47	241.316	238.647	1.11
8	410.928	9.2546	9.2846	-.33	241.316	240.014	.54
8	444.261	8.0143	8.0139	-.12	241.316	241.921	.16
8	477.594	6.9989	7.0238	-.36	241.316	240.251	.44
8	510.928	6.2432	6.2607	-.28	241.316	240.517	.33
8	310.928	14.1021	14.1931	-.65	275.790	264.570	4.07
8	344.261	12.7400	12.7933	-.42	275.790	271.968	1.71
8	377.594	11.3044	11.3655	-.54	275.790	271.761	1.46
8	410.928	9.9483	9.9934	-.45	275.790	273.361	.88
8	444.261	8.7521	8.7770	-.28	275.790	274.566	.44
8	477.594	7.7541	7.7739	-.26	275.790	274.815	.35
8	510.928	6.9554	6.9730	-.25	275.790	274.893	.33
8	310.928	14.3527	14.4509	-.68	310.264	296.649	4.39
8	344.261	13.0835	13.1488	-.50	310.264	303.521	2.17
8	377.594	11.7680	11.8354	-.57	310.264	304.923	1.72
8	410.928	10.5117	10.5692	-.55	310.264	306.520	1.21
8	444.261	9.3799	9.4179	-.40	310.264	308.098	.70
8	477.594	8.4052	8.4275	-.27	310.264	309.005	.41
8	510.928	7.5930	7.6089	-.21	310.264	309.356	.29
8	310.928	14.5677	14.6817	-.78	344.738	327.261	5.07
8	344.261	13.3764	13.4572	-.60	344.738	335.259	2.75
8	377.594	12.1684	12.2322	-.59	344.738	338.099	1.93
8	410.928	10.9866	11.0507	-.58	344.738	339.811	1.43
8	444.261	9.9098	9.9607	-.51	344.738	341.312	.99
8	477.594	8.9742	8.9974	-.26	344.738	343.240	.43
8	510.928	8.1552	8.1775	-.27	344.738	343.340	.41
8	310.928	14.9359	15.0328	-.98	413.685	387.031	6.44
8	344.261	13.8663	13.9751	-.78	413.685	397.958	3.81
8	377.594	12.8094	12.8796	-.55	413.685	405.351	2.01
8	410.928	11.7577	11.8243	-.57	413.685	406.999	1.62
8	444.261	10.7824	10.8363	-.50	413.685	408.878	1.16
8	477.594	9.9049	9.9376	-.33	413.685	410.983	.65
8	510.928	9.1371	9.1486	-.04	413.685	413.405	.07
8	310.928	15.2796	15.4248	-.95	482.633	452.014	6.34
8	344.261	14.2981	14.4023	-.73	482.633	464.707	3.71
8	377.594	13.3124	13.3984	-.65	482.633	470.251	2.57
8	410.928	12.3491	12.4327	-.68	482.633	472.268	2.15
8	444.261	11.4576	11.5232	-.57	482.633	475.381	1.50
8	477.594	10.6337	10.6835	-.47	482.633	477.553	1.05
8	510.928	9.8992	9.9222	-.23	482.633	480.398	.46
8	310.928	15.5877	15.7242	-.88	551.581	519.093	5.89
8	344.261	14.6722	14.7672	-.65	551.581	532.678	3.43
8	377.594	13.7271	13.8326	-.77	551.581	533.797	3.22

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
8	41[illegible].928	12.6373	12.9346	-.76	551.581	537.261	2.60
8	444.261	12.0126	12.0859	-.61	551.581	541.880	1.76
8	477.594	11.2338	11.2959	-.55	551.581	544.006	1.37
8	51[illegible].928	10.5290	10.5705	-.39	551.581	546.796	.87
8	310.928	15.8659	15.9910	-.79	620.528	587.282	5.36
8	344.261	14.9988	15.0866	-.59	620.528	600.729	3.19
8	377.594	14.1021	14.2067	-.74	620.528	600.286	3.26
8	41[illegible].928	13.2590	13.3621	-.78	620.528	602.968	2.83
8	444.261	12.4801	12.5620	-.66	620.528	607.893	2.04
8	477.594	11.7416	11.8135	-.61	620.528	610.301	1.65
8	510.928	11.0763	11.1205	-.40	620.528	614.586	.96
8	31[illegible].928	16.1346	16.2321	-.60	689.476	660.819	4.16
8	344.261	15.2747	15.3712	-.63	689.476	665.251	3.51
8	377.594	14.4380	14.536[illegible]	-.68	689.476	668.093	3.10
8	410.928	13.6362	13.7348	-.72	689.476	670.374	2.77
8	444.261	12.8838	12.9748	-.71	689.476	673.486	2.32
8	477.594	12.1848	12.2611	-.63	689.476	677.051	1.80
8	51[illegible].928	11.5520	11.5966	-.39	689.476	682.604	1.00

NP = 176, DNRMSPCT = .569, PMEANPCT = 1.071

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
9	273.150	.8538	.8546	-.09	15.874	15.862	.07
9	298.142	.8538	.8543	-.06	17.978	17.969	.05
9	323.140	.8538	.8540	-.02	20.036	20.032	.02
9	348.143	.8538	.8538	-.00	22.065	22.064	.00
9	373.150	.8538	.8535	.03	24.066	24.074	-.03
9	398.160	.8538	.8533	.06	26.053	26.067	-.05
9	423.170	.8538	.8533	.06	28.031	28.046	-.06
9	273.150	1.0672	1.0686	-.13	18.802	18.785	.09
9	298.142	1.0672	1.0680	-.07	21.539	21.527	.06
9	323.140	1.0672	1.0676	-.03	24.201	24.194	.03
9	348.143	1.0672	1.0672	.00	26.812	26.812	-.00
9	373.150	1.0672	1.0668	.04	29.385	29.396	-.04
9	398.160	1.0672	1.0665	.07	31.933	31.953	-.06
9	423.170	1.0672	1.0665	.07	34.468	34.489	-.06
9	273.150	1.2812	1.2833	-.17	21.349	21.325	.11
9	298.142	1.2812	1.2825	-.11	24.769	24.749	.08
9	323.140	1.2812	1.2817	-.04	28.067	28.057	.03
9	348.143	1.2812	1.2812	-.00	31.294	31.293	.00
9	373.150	1.2812	1.2805	.05	34.465	34.479	-.04
9	398.160	1.2812	1.2801	.08	37.599	37.627	-.07
9	423.170	1.2812	1.2801	.09	40.713	40.745	-.08
9	273.150	1.4870	1.4897	-.19	23.441	23.415	.11
9	298.142	1.4870	1.4888	-.13	27.563	27.539	.09
9	323.140	1.4870	1.4877	-.05	31.508	31.496	.04
9	348.143	1.4870	1.4870	-.00	35.354	35.353	.00
9	373.150	1.4870	1.4862	.05	39.125	39.143	-.05
9	398.160	1.4870	1.4855	.10	42.848	42.883	-.08
9	423.170	1.4870	1.4855	.10	46.543	46.584	-.09
9	298.142	1.6354	1.6376	-.13	29.397	29.372	.09
9	323.140	1.6354	1.6365	-.06	33.830	33.814	.05
9	348.143	1.6354	1.6357	-.02	38.142	38.137	.01
9	373.150	1.6354	1.6346	.05	42.360	42.377	-.04
9	398.160	1.6354	1.6339	.09	46.528	46.558	-.06
9	423.170	1.6354	1.6338	.10	50.647	50.693	-.09
9	298.142	1.7032	1.7058	-.15	30.189	30.161	.10
9	323.140	1.7032	1.7043	-.07	34.846	34.830	.05
9	348.143	1.7032	1.7034	-.01	39.371	39.368	.01
9	373.150	1.7032	1.7022	.06	43.798	43.819	-.05
9	398.160	1.7032	1.7014	.11	48.161	48.205	-.09
9	423.170	1.7032	1.7014	.11	52.490	52.541	-.10
9	298.142	1.9165	1.9199	-.18	32.483	32.449	.11
9	323.140	1.9165	1.9179	-.08	37.873	37.854	.05
9	348.143	1.9165	1.9166	-.01	43.093	43.091	.01
9	373.150	1.9165	1.9152	.07	48.192	48.217	-.05
9	398.160	1.9165	1.9143	.11	53.214	53.264	-.09
9	423.170	1.9165	1.9143	.11	58.192	58.249	-.10
9	298.142	1.9754	1.9786	-.16	33.063	33.031	.09
9	323.140	1.9754	1.9769	-.08	38.665	38.645	.05
9	348.143	1.9754	1.9757	-.01	44.084	44.079	.01
9	373.150	1.9754	1.9745	.05	49.378	49.396	-.04
9	398.160	1.9754	1.9733	.11	54.581	54.629	-.09
9	423.170	1.9754	1.9731	.11	59.738	59.798	-.10

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
9	298.142	2.1218	2.1261	-.21	34.428	34.390	.11
9	323.140	2.1218	2.1239	-.10	40.556	40.530	.07
9	348.143	2.1218	2.1223	-.02	46.470	46.462	.02
9	373.150	2.1218	2.1206	.06	52.238	52.262	-.04
9	398.160	2.1218	2.1194	.11	57.913	57.965	-.09
9	423.170	2.1218	2.1195	.11	63.538	63.596	-.09
9	298.142	2.3339	2.3393	-.23	36.188	36.141	.11
9	323.140	2.3339	2.3367	-.12	43.101	43.069	.07
9	348.143	2.3339	2.3349	-.04	49.758	49.744	.03
9	373.150	2.3339	2.3329	.05	56.240	56.260	-.04
9	398.160	2.3339	2.3316	.10	62.614	62.665	-.08
9	423.170	2.3339	2.3314	.11	68.922	68.985	-.09
9	298.142	2.4084	2.4135	-.21	36.734	36.698	.10
9	323.140	2.4084	2.4111	-.11	43.938	43.908	.07
9	348.143	2.4084	2.4093	-.04	50.862	50.848	.03
9	373.150	2.4084	2.4074	.04	57.603	57.622	-.03
9	398.160	2.4084	2.4059	.10	64.224	64.278	-.08
9	423.170	2.4084	2.4056	.11	70.776	70.845	-.10
9	298.142	2.9393	2.9474	-.27	39.961	39.862	.10
9	323.140	2.9393	2.9453	-.20	49.226	49.176	.11
9	348.143	2.9393	2.9426	-.11	58.126	58.084	.07
9	373.150	2.9393	2.9396	-.01	66.768	66.763	.01
9	398.160	2.9393	2.9377	.05	75.253	75.285	-.04
9	423.170	2.9393	2.9372	.07	83.640	83.689	-.06
9	323.140	3.5820	3.5955	-.38	54.204	54.115	.16
9	348.143	3.5820	3.5904	-.23	65.647	65.557	.14
9	373.150	3.5820	3.5863	-.12	76.769	76.706	.08
9	398.160	3.5820	3.5834	-.04	87.686	87.659	.03
9	423.170	3.5820	3.5827	-.02	98.481	98.466	.02
9	323.140	4.4288	4.4551	-.59	58.974	58.851	.21
9	348.143	4.4288	4.4454	-.37	74.001	73.851	.20
9	373.150	4.4288	4.4389	-.23	88.656	88.529	.15
9	398.160	4.4288	4.4359	-.16	103.099	102.973	.12
9	423.170	4.4288	4.4350	-.14	117.402	117.266	.12
9	323.140	5.4403	5.4572	-.31	62.995	62.935	.10
9	348.143	5.4403	5.4483	-.15	82.596	82.530	.08
9	373.150	5.4403	5.4462	-.11	101.932	101.853	.08
9	398.160	5.4403	5.4458	-.10	121.098	120.998	.08
9	423.170	5.4403	5.4474	-.13	140.168	140.004	.12
9	323.140	6.6818	6.5782	1.55	66.912	67.288	-.56
9	348.143	6.6818	6.6276	.81	92.790	93.292	-.54
9	373.150	6.6818	6.6503	.47	118.770	119.245	-.40
9	398.160	6.6818	6.6618	.30	144.726	145.148	-.29
9	423.170	6.6818	6.6713	.16	170.709	170.995	-.17
9	323.140	8.2024	7.9956	2.52	72.785	73.864	-1.48
9	348.143	8.2024	8.0975	1.28	108.346	109.678	-1.23
9	373.150	8.2024	8.1427	.73	144.605	145.825	-.84
9	398.160	8.2024	8.1657	.45	181.105	182.143	-.57
9	423.170	8.2024	8.1779	.30	217.659	218.547	-.41

NP = 101, DNRMSPCT = .372, PMEANPCT = .127

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
10	248.150	.7000	.6985	.21	11.763	11.782	-.16
10	273.150	.7500	.7501	-.02	14.298	14.296	.01
10	298.150	.7500	.7503	-.04	16.116	16.111	.03
10	303.150	.7500	.7503	-.04	16.475	16.469	.04
10	323.150	.7500	.7502	-.03	17.897	17.892	.03
10	348.150	.7500	.7501	-.02	19.652	19.649	.01
10	373.150	.7500	.7501	-.03	21.391	21.390	.00
10	398.150	.7500	.7500	.01	23.116	23.117	-.01
10	423.150	.7500	.7499	.02	24.830	24.834	-.02
10	448.150	.7500	.7499	.02	26.538	26.542	-.02
10	473.150	.7500	.7499	.02	28.239	28.244	-.02
10	498.150	.7500	.7499	.02	29.934	29.939	-.02
10	523.150	.7500	.7499	.01	31.627	31.630	-.01
10	548.150	.7500	.7500	.00	33.315	33.316	-.00
10	573.150	.7500	.7501	-.01	35.003	34.998	.01
10	598.150	.7500	.7503	-.03	36.689	36.677	.03
10	623.150	.7500	.7504	-.06	38.375	38.353	.06
10	273.150	1.0000	1.0001	-.01	17.908	17.907	.01
10	298.150	1.0000	1.0003	-.03	20.450	20.445	.03
10	303.150	1.0000	1.0003	-.03	20.948	20.944	.02
10	323.150	1.0000	1.0001	-.01	22.919	22.918	.01
10	348.150	1.0000	.9998	.02	25.344	25.348	-.01
10	373.150	1.0000	.9996	.04	27.738	27.747	-.03
10	398.150	1.0000	.9995	.05	30.109	30.123	-.05
10	423.150	1.0000	.9994	.06	32.462	32.481	-.06
10	448.150	1.0000	.9994	.06	34.802	34.823	-.06
10	473.150	1.0000	.9993	.07	37.130	37.153	-.06
10	498.150	1.0000	.9994	.06	39.450	39.473	-.06
10	523.150	1.0000	.9995	.05	41.763	41.785	-.05
10	548.150	1.0000	.9996	.04	44.071	44.089	-.04
10	573.150	1.0000	.9997	.03	46.375	46.386	-.03
10	598.150	1.0000	.9999	.01	48.675	48.678	-.01
10	623.150	1.0000	1.0003	-.03	50.982	50.964	.03
10	273.150	1.5000	1.4994	.04	23.536	23.536	-.02
10	298.150	1.5000	1.5009	-.06	27.719	27.707	.04
10	303.150	1.5000	1.5008	-.05	28.528	28.518	.04
10	323.150	1.5000	1.5002	-.01	31.709	31.706	.01
10	348.150	1.5000	1.4994	.04	35.592	35.604	-.03
10	373.150	1.5000	1.4989	.08	39.407	39.432	-.06
10	398.150	1.5000	1.4985	.10	43.172	43.208	-.08
10	423.150	1.5000	1.4983	.11	46.899	46.945	-.10
10	448.150	1.5000	1.4984	.11	50.600	50.651	-.10
10	473.150	1.5000	1.4984	.11	54.276	54.330	-.10
10	498.150	1.5000	1.4985	.10	57.934	57.988	-.09
10	523.150	1.5000	1.4987	.08	61.578	61.627	-.08
10	548.150	1.5000	1.4991	.06	65.215	65.251	-.06
10	573.150	1.5000	1.4992	.05	68.827	68.861	-.05
10	598.150	1.5000	1.4997	.02	72.443	72.459	-.02
10	623.150	1.5000	1.5004	-.03	76.067	76.047	.03
10	298.150	2.0000	2.0019	-.09	33.289	33.270	.05
10	303.150	2.0000	2.0017	-.09	34.448	34.431	.05
10	323.150	2.0000	2.0005	-.02	38.978	38.972	.02

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
10	348.150	2.0000	1.9991	.04	44.474	44.488	-.03
10	373.150	2.0000	1.9983	.09	49.850	49.884	-.07
10	398.150	2.0000	1.9976	.12	55.139	55.193	-.10
10	423.150	2.0000	1.9972	.14	60.365	60.437	-.12
10	448.150	2.0000	1.9973	.13	65.556	65.628	-.12
10	473.150	2.0000	1.9976	.12	70.697	70.776	-.11
10	498.150	2.0000	1.9977	.11	75.809	75.893	-.11
10	523.150	2.0000	1.9980	.10	80.896	80.973	-.09
10	548.150	2.0000	1.9983	.09	85.959	86.031	-.08
10	573.150	2.0000	1.9987	.07	91.006	91.066	-.06
10	598.150	2.0000	1.9994	.03	96.054	96.082	-.03
10	623.150	2.0000	2.0005	-.02	101.105	101.081	.02
10	298.150	2.5000	2.5036	-.14	37.369	37.345	.07
10	303.150	2.5000	2.5035	-.14	38.918	38.892	.07
10	323.150	2.5000	2.5019	-.08	44.928	44.908	.05
10	348.150	2.5000	2.4994	.02	52.169	52.177	-.02
10	373.150	2.5000	2.4980	.08	59.233	59.269	-.06
10	398.150	2.5000	2.4973	.11	66.177	66.234	-.09
10	423.150	2.5000	2.4969	.12	73.029	73.106	-.10
10	448.150	2.5000	2.4969	.12	79.818	79.904	-.11
10	473.150	2.5000	2.4969	.12	86.544	86.641	-.11
10	498.150	2.5000	2.4972	.11	93.231	93.329	-.10
10	523.150	2.5000	2.4978	.09	99.892	99.974	-.08
10	548.150	2.5000	2.4985	.06	106.522	106.584	-.06
10	573.150	2.5000	2.4991	.04	113.123	113.162	-.04
10	598.150	2.5000	2.4998	.01	119.704	119.712	-.01
10	623.150	2.5000	2.5019	-.06	126.314	126.237	.06
10	298.150	3.0000	3.0061	-.20	43.172	43.144	.07
10	303.150	3.0000	3.0067	-.22	42.149	42.113	.09
10	323.150	3.0000	3.0049	-.16	49.750	49.708	.08
10	348.150	3.0000	3.0012	-.04	58.862	58.847	.03
10	373.150	3.0000	2.9989	.04	67.732	67.749	-.03
10	398.150	3.0000	2.9980	.07	76.456	76.489	-.05
10	423.150	3.0000	2.9976	.10	85.039	85.108	-.08
10	448.150	3.0000	2.9973	.09	93.560	93.633	-.08
10	473.150	3.0000	2.9976	.08	102.007	102.080	-.07
10	498.150	3.0000	2.9979	.07	110.392	110.465	-.07
10	523.150	3.0000	2.9985	.05	118.741	118.795	-.05
10	548.150	3.0000	2.9994	.02	127.056	127.079	-.02
10	573.150	3.0000	3.0001	-.00	135.329	135.323	.00
10	598.150	3.0000	3.0013	-.04	143.594	143.531	.04
10	623.150	3.0000	3.0034	-.11	151.881	151.706	.12
10	303.150	3.5000	3.5115	-.33	44.346	44.306	.09
10	323.150	3.5000	3.5104	-.30	53.635	53.564	.13
10	348.150	3.5000	3.5046	-.13	64.723	64.673	.08
10	373.150	3.5000	3.5012	-.03	75.512	75.494	.02
10	398.150	3.5000	3.5000	.00	86.122	86.122	-.00
10	423.150	3.5000	3.4991	.03	96.566	96.608	-.02
10	448.150	3.5000	3.4982	.02	106.961	106.982	-.02
10	473.150	3.5000	3.4997	.01	117.256	117.266	-.01
10	498.150	3.5000	3.4999	.00	127.471	127.475	-.00
10	523.150	3.5000	3.5006	-.02	137.642	137.621	.02
10	548.150	3.5000	3.5013	-.04	147.765	147.710	.04

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
10	573.150	3.5000	3.5023	-.06	157.853	157.751	.07
10	598.150	3.5000	3.5036	-.10	167.624	167.748	.10
10	623.150	3.5000	3.5067	-.17	177.125	177.726	.18
10	303.150	4.0000	4.0173	-.43	45.714	45.679	.09
10	323.150	4.0000	4.0186	-.47	56.768	56.665	.18
10	348.150	4.0000	4.0091	-.23	69.920	69.831	.13
10	373.150	4.0000	4.0044	-.11	82.737	82.675	.07
10	398.150	4.0000	4.0025	-.06	95.353	95.307	.05
10	423.150	4.0000	4.0017	-.04	107.821	107.785	.03
10	448.150	4.0000	4.0020	-.05	120.189	120.136	.04
10	473.150	4.0000	4.0023	-.06	132.461	132.394	.05
10	498.150	4.0000	4.0027	-.07	144.652	144.563	.06
10	523.150	4.0000	4.0035	-.09	156.793	156.659	.09
10	548.150	4.0000	4.0039	-.10	168.886	168.699	.11
10	573.150	4.0000	4.0048	-.12	180.897	180.675	.12
10	598.150	4.0000	4.0062	-.16	192.921	192.606	.16
10	623.150	4.0000	4.0091	-.23	204.991	204.492	.24
10	303.150	4.5000	4.5212	-.47	46.448	46.427	.04
10	323.150	4.5000	4.5251	-.56	59.302	59.188	.19
10	348.150	4.5000	4.5117	-.26	74.611	74.496	.14
10	373.150	4.5000	4.5064	-.14	89.556	89.471	.09
10	398.150	4.5000	4.5040	-.11	104.316	104.231	.08
10	423.150	4.5000	4.5043	-.10	118.922	118.823	.08
10	448.150	4.5000	4.5051	-.11	133.434	133.299	.10
10	473.150	4.5000	4.5061	-.11	147.823	147.667	.11
10	498.150	4.5000	4.5057	-.13	162.148	161.947	.12
10	523.150	4.5000	4.5063	-.14	176.399	176.151	.14
10	548.150	4.5000	4.5069	-.14	190.571	190.287	.15
10	573.150	4.5000	4.5071	-.16	204.716	204.363	.17
10	598.150	4.5000	4.5086	-.19	218.837	218.384	.21
10	623.150	4.5000	4.5119	-.26	233.031	232.355	.29
10	323.150	5.0000	5.0241	-.48	61.395	61.300	.15
10	348.150	5.0000	5.0093	-.19	78.919	78.843	.10
10	373.150	5.0000	5.0053	-.11	96.135	96.065	.07
10	398.150	5.0000	5.0053	-.11	113.178	113.084	.08
10	423.150	5.0000	5.0056	-.11	130.076	129.951	.10
10	448.150	5.0000	5.0065	-.13	146.871	146.694	.12
10	473.150	5.0000	5.0069	-.14	163.555	163.335	.13
10	498.150	5.0000	5.0073	-.15	180.155	179.889	.15
10	523.150	5.0000	5.0073	-.15	196.667	196.364	.15
10	548.150	5.0000	5.0076	-.15	213.119	212.779	.16
10	573.150	5.0000	5.0085	-.17	229.543	229.112	.19
10	598.150	5.0000	5.0107	-.21	245.951	245.396	.23
10	623.150	5.0000	5.0136	-.27	262.444	261.626	.31
10	323.150	5.5000	5.5279	-.14	63.184	63.155	.04
10	348.150	5.5000	5.4983	.03	83.120	83.134	-.02
10	373.150	5.5000	5.4993	.01	102.635	102.645	-.01
10	398.150	5.5000	5.5018	-.03	122.111	122.079	.03
10	423.150	5.5000	5.5038	-.07	141.466	141.377	.06
10	448.150	5.5000	5.5058	-.10	161.716	161.564	.09
10	473.150	5.5000	5.5061	-.11	179.857	179.657	.11
10	498.150	5.5000	5.5069	-.13	198.931	198.665	.13
10	523.150	5.5000	5.5070	-.13	217.961	217.597	.14

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
10	548.150	5.5000	5.5071	-.13	230.857	230.459	.15
10	573.150	5.5000	5.5081	-.15	255.698	255.257	.17
10	598.150	5.5000	5.5095	-.17	274.554	273.994	.20
10	623.150	5.5000	5.5134	-.24	293.532	292.674	.29
10	323.150	6.0000	5.9704	.49	64.792	64.894	-.16
10	348.150	6.0000	5.9771	.38	87.049	87.245	-.22
10	373.150	6.0000	5.9864	.23	109.215	109.403	-.17
10	398.150	6.0000	5.9938	.10	131.369	131.426	-.09
10	423.150	6.0000	5.9979	.04	153.294	153.346	-.03
10	448.150	6.0000	6.0008	-.01	175.196	175.171	.01
10	473.150	6.0000	6.0027	-.05	197.010	196.913	.05
10	498.150	6.0000	6.0042	-.07	218.751	218.573	.08
10	523.150	6.0000	6.0047	-.07	240.359	240.172	.08
10	548.150	6.0000	6.0045	-.08	261.935	261.699	.09
10	573.150	6.0000	6.0053	-.09	283.465	283.161	.11
10	598.150	6.0000	6.0069	-.12	304.998	304.563	.14
10	623.150	6.0000	6.0111	-.19	326.668	325.900	.23
10	323.150	6.5000	6.4139	1.32	66.335	66.641	-.46
10	348.150	6.5000	6.4477	.80	91.161	91.632	-.52
10	373.150	6.5000	6.4677	.50	116.055	116.529	-.41
10	398.150	6.5000	6.4816	.29	140.958	141.349	-.28
10	423.150	6.5000	6.4887	.17	165.830	166.098	-.18
10	448.150	6.5000	6.4938	.09	190.579	190.779	-.10
10	473.150	6.5000	6.4967	.05	215.266	215.393	-.06
10	498.150	6.5000	6.4987	.02	239.886	239.942	-.02
10	523.150	6.5000	6.4998	.02	264.373	264.425	-.02
10	548.150	6.5000	6.5001	-.00	288.851	288.845	.00
10	573.150	6.5000	6.5018	-.03	313.236	313.201	.01
10	598.150	6.5000	6.5027	-.04	337.677	337.494	.05
10	623.150	6.5000	6.5066	-.10	362.215	361.725	.14
10	323.150	7.0000	6.8495	2.15	67.920	68.492	-.84
10	348.150	7.0000	6.9160	1.20	95.515	96.337	-.85
10	373.150	7.0000	6.9482	.74	123.367	124.189	-.67
10	398.150	7.0000	6.9688	.45	151.344	152.037	-.46
10	423.150	7.0000	6.9794	.29	179.269	179.858	-.33
10	448.150	7.0000	6.9871	.18	207.185	207.639	-.22
10	473.150	7.0000	6.9906	.13	234.982	235.373	-.17
10	498.150	7.0000	6.9926	.11	262.698	263.053	-.14
10	523.150	7.0000	6.9937	.09	290.334	290.677	-.12
10	548.150	7.0000	6.9945	.08	317.906	318.241	-.11
10	573.150	7.0000	6.9953	.07	345.424	345.743	-.09
10	598.150	7.0000	6.9975	.04	372.894	373.183	-.08
10	623.150	7.0000	7.0021	-.03	400.329	400.558	.06
10	323.150	7.5000	7.3020	2.64	69.687	70.513	-1.19
10	348.150	7.5000	7.3920	1.44	100.302	101.448	-1.14
10	373.150	7.5000	7.4339	.88	131.381	132.529	-.87
10	398.150	7.5000	7.4597	.54	162.693	163.673	-.60
10	423.150	7.5000	7.4737	.36	193.990	194.835	-.44
10	448.150	7.5000	7.4821	.24	225.305	225.990	-.30
10	473.150	7.5000	7.4866	.18	256.569	257.119	-.24
10	498.150	7.5000	7.4893	.14	287.846	288.208	-.25
10	523.150	7.5000	7.4899	.13	318.646	319.249	-.19
10	548.150	7.5000	7.4900	.13	349.569	350.234	-.19

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
10	573.150	7.5000	7.4905	.13	380.454	381.159	-.19
10	323.150	8.0000	7.7835	2.71	71.775	72.820	-1.46
10	348.150	8.0000	7.8827	1.47	135.756	137.154	-1.33
10	373.150	8.0000	7.9306	.87	140.417	141.764	-.96
10	398.150	8.0000	7.9566	.54	175.341	176.511	-.67
10	423.150	8.0000	7.9714	.36	210.334	211.325	-.47
10	448.150	8.0000	7.9808	.24	245.348	246.162	-.33
10	473.150	8.0000	7.9869	.16	280.338	280.994	-.23
10	498.150	8.0000	7.9879	.15	315.199	315.899	-.22
10	523.150	8.0000	7.9881	.15	349.779	350.566	-.22
10	548.150	8.0000	7.9881	.15	384.427	385.279	-.23
10	323.150	8.5000	8.2976	2.38	74.407	75.613	-1.62
10	348.150	8.5000	8.3876	1.32	112.147	113.716	-1.40
10	373.150	8.5000	8.4347	.77	150.763	152.210	-.96
10	398.150	8.5000	8.4603	.47	189.725	190.915	-.64
10	423.150	8.5000	8.4742	.30	228.726	229.736	-.44
10	448.150	8.5000	8.4836	.19	267.823	268.603	-.29
10	473.150	8.5000	8.4888	.13	306.859	307.486	-.20
10	498.150	8.5000	8.4888	.13	345.830	346.354	-.21
10	523.150	8.5000	8.4879	.14	384.326	385.186	-.23
10	323.150	9.0000	8.8295	1.89	77.856	79.183	-1.70
10	348.150	9.0000	8.9026	1.08	119.857	121.487	-1.36
10	373.150	9.0000	8.9446	.62	162.857	164.291	-.88
10	398.150	9.0000	8.9686	.35	206.258	207.362	-.54
10	423.150	9.0000	8.9807	.21	249.728	250.584	-.34
10	448.150	9.0000	8.9878	.14	293.226	293.881	-.22
10	473.150	9.0000	8.9924	.09	336.726	337.204	-.14
10	498.150	9.0000	8.9937	.10	379.856	380.520	-.18
10	323.150	9.5000	9.3648	1.42	82.499	83.923	-1.73
10	348.150	9.5000	9.4214	.83	129.325	130.945	-1.25
10	373.150	9.5000	9.4567	.46	177.203	178.537	-.75
10	398.150	9.5000	9.4775	.24	225.515	226.443	-.41
10	423.150	9.5000	9.4879	.13	273.857	274.517	-.23
10	448.150	9.5000	9.4943	.06	322.334	322.685	-.11
10	473.150	9.5000	9.4962	.04	370.609	370.885	-.07
10	323.150	10.0000	9.8960	1.04	88.838	90.341	-1.69
10	348.150	10.0000	9.9387	.61	141.305	142.668	-1.12
10	373.150	10.0000	9.9685	.31	194.424	195.595	-.60
10	398.150	10.0000	9.9867	.13	248.207	248.853	-.26
10	423.150	10.0000	9.9947	.05	301.977	302.295	-.11
10	448.150	10.0000	9.9984	.02	355.715	355.823	-.03
10	323.150	10.5000	10.4135	.77	97.478	99.071	-1.63
10	348.150	10.5000	10.4533	.44	155.840	157.359	-.97
10	373.150	10.5000	10.4780	.21	215.238	216.234	-.46
10	398.150	10.5000	10.4928	.07	275.014	275.432	-.15
10	423.150	10.5000	10.4990	.01	334.734	334.804	-.02
10	448.150	10.5000	10.5011	-.01	394.346	394.252	.02
10	298.150	11.0000	10.9505	.45	46.397	47.015	-1.33
10	323.150	11.0000	10.9371	.57	109.241	110.891	-1.55
10	348.150	11.0000	10.9649	.32	174.420	175.861	-.83
10	373.150	11.0000	10.9861	.13	241.596	241.362	-.32
10	398.150	11.0000	10.9976	.02	306.980	307.147	-.05
10	423.150	11.0000	11.0019	-.02	373.226	373.071	.04

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
10	298.150	11.5[illegible]	11.4463	.47	54.120	55.181	-1.96
10	323.150	11.5000	11.4510	.43	124.979	126.742	-1.41
10	348.150	11.5000	11.4735	.23	197.803	199.175	-.69
10	373.150	11.5000	11.4916	.07	271.474	272.040	-.21
10	398.150	11.5000	11.5014	-.01	345.236	345.118	.03
10	298.150	12.0000	11.9492	.42	66.139	67.636	-2.26
10	323.150	12.0000	11.9638	.30	146.022	147.741	-1.18
10	348.150	12.0000	11.9808	.16	227.224	228.474	-.55
10	373.150	12.0000	11.9959	.03	309.161	309.502	-.11
10	398.150	12.0000	12.0051	-.04	391.141	391.642	.13
10	298.150	12.5000	12.4552	.36	83.768	85.646	-2.24
10	323.150	12.5000	12.4727	.22	173.516	175.207	-.97
10	348.150	12.5000	12.4869	.10	264.063	265.132	-.40
10	373.150	12.5000	12.4989	.01	355.074	355.182	-.03
10	298.150	13.0000	12.9634	.28	108.587	110.697	-1.94
10	323.150	13.0000	12.9772	.18	208.868	210.680	-.87
10	348.150	13.0000	12.9914	.07	309.878	310.747	-.28
10	273.150	13.5[illegible]	13.4729	.21	31.563	33.[illegible]62	-4.49
10	298.150	13.5000	13.4714	.21	142.310	144.518	-1.55
10	323.150	13.5000	13.4822	.13	254.146	255.952	-.71
10	348.150	13.5000	13.4938	.05	366.398	367.174	-.21
10	273.150	14.[illegible]00	13.9750	.18	62.783	64.63[illegible]	-2.94
10	298.150	14.0000	13.9794	.15	187.036	189.117	-1.11
10	323.150	14.0000	13.9893	.08	311.735	313.[illegible]98	-.44
10	273.150	14.5000	14.4856	.13	106.257	108.181	-1.83
10	298.150	14.5000	14.4870	.09	245.114	246.806	-.69
10	323.150	14.5000	14.4943	.04	383.607	384.513	-.24
10	273.150	15.0000	14.9851	.10	164.251	166.214	-1.20
10	298.150	15.0000	14.9897	.07	318.560	320.252	-.53
10	248.150	15.5000	15.4901	.06	67.393	68.722	-1.97
10	273.150	15.5000	15.4922	.05	240.347	241.677	-.55
10	298.150	15.5000	15.4889	.07	410.257	412.526	-.55
10	248.150	16.0000	15.9915	.05	144.656	146.158	-1.04
10	273.150	16.0000	15.9951	.03	336.908	337.965	-.31

NP = 208, DNRMSPCT = .432, PMEANPCT = .318

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
16	305.372	3.8208	3.8287	-.21	46.478	46.454	.05
16	313.706	3.8168	3.8332	-.43	50.863	50.791	.14
16	322.039	3.8134	3.8354	-.58	55.151	55.023	.23
16	305.372	5.0020	4.9082	1.88	48.353	48.425	-.15
16	310.928	4.9983	4.9871	.23	52.497	52.516	-.04
16	316.483	4.9957	5.0180	-.45	56.585	56.525	.11
16	322.039	4.9927	5.0407	-.96	60.660	60.482	.29
16	306.483	6.8281	5.9503	12.85	49.759	49.951	-.38
16	316.483	6.8211	6.5927	3.35	60.157	60.667	-.85
16	324.817	6.8151	6.6621	2.25	68.954	69.576	-.90
16	305.372	9.0027	8.7020	3.34	49.318	49.796	-.97
16	309.261	8.9980	8.7352	2.92	55.344	56.112	-1.39
16	313.706	8.9933	8.7382	2.84	62.287	63.409	-1.80
16	322.039	8.9850	8.7994	2.07	75.849	77.206	-1.79
16	302.594	9.7413	9.6125	1.32	46.588	47.052	-1.00
16	305.372	9.7369	9.5774	1.64	51.538	52.289	-1.46
16	313.706	9.7266	9.5614	1.70	66.879	68.217	-2.00
16	322.039	9.7180	9.5830	1.39	82.751	84.313	-1.89
16	298.150	10.6495	10.5927	.53	42.789	43.268	-1.12
16	299.817	10.6455	10.5655	.75	46.347	47.085	-1.59
16	303.589	10.6392	10.5404	.93	54.689	55.789	-2.01
16	310.928	10.6289	10.5285	.94	71.354	72.849	-2.10
16	322.039	10.6156	10.5308	.80	97.113	98.861	-1.80
16	298.150	10.8789	10.8140	.60	44.850	45.559	-1.58
16	305.372	10.8663	10.7858	.74	61.929	63.122	-1.93
16	313.706	10.8553	10.7777	.72	82.054	83.556	-1.83
16	322.039	10.8454	10.7817	.59	102.560	104.079	-1.48
16	295.928	11.2404	11.1961	.39	43.933	44.571	-1.45
16	296.483	11.2391	11.1958	.39	45.388	46.025	-1.40
16	298.150	11.2358	11.1934	.40	49.691	50.404	-1.44
16	299.817	11.2325	11.1785	.48	53.889	54.787	-1.67
16	302.594	11.2278	11.1735	.48	61.122	62.116	-1.63
16	310.928	11.2158	11.1607	.49	82.916	84.196	-1.54
16	316.483	11.2088	11.1583	.45	97.630	98.966	-1.37
16	322.039	11.2009	11.1628	.34	112.584	113.717	-1.01
16	293.150	11.7729	11.7343	.33	45.485	46.308	-1.81
16	298.150	11.7626	11.7167	.39	59.984	61.112	-1.88
16	306.483	11.7496	11.7026	.40	84.488	85.902	-1.67
16	314.261	11.7389	11.6996	.34	107.696	109.084	-1.29
16	322.039	11.7293	11.6994	.25	131.083	132.288	-.92
16	288.706	12.3831	12.3538	.24	47.188	48.103	-1.95
16	294.261	12.3708	12.3415	.24	65.373	66.913	-1.58
16	298.150	12.3642	12.3317	.26	78.876	80.123	-1.58

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
16	299.817	12.3615	12.3298	.26	84.530	85.787	-1.49
16	305.372	12.3528	12.3286	.20	103.594	104.656	-1.03
16	285.372	12.6854	12.6711	.11	46.029	46.556	-1.14
16	292.039	12.6704	12.6400	.24	69.382	70.660	-1.84
16	298.150	12.6598	12.6332	.21	91.562	92.809	-1.36
16	302.594	12.6525	12.6264	.21	107.586	108.898	-1.22
16	310.928	12.6402	12.6200	.16	137.909	139.052	-.83
16	283.150	12.9215	12.8989	.17	46.498	47.444	-2.03
16	285.928	12.9142	12.8907	.18	56.951	57.988	-1.82
16	292.594	12.9006	12.8760	.19	82.165	83.381	-1.48
16	298.150	12.8909	12.8709	.16	103.463	104.547	-1.05
16	280.372	13.1919	13.1795	.09	47.898	48.498	-1.25
16	291.483	13.1676	13.1534	.11	92.507	93.332	-.89
16	298.150	13.1563	13.1455	.08	119.548	120.238	-.58
16	302.594	13.1496	13.1435	.04	137.757	138.125	-.27
16	285.928	13.4506	13.4276	.17	85.350	86.805	-1.70
16	292.039	13.4390	13.4207	.14	111.702	112.961	-1.13
16	298.150	13.4287	13.4139	.11	137.985	139.084	-.80

NP = 61, DNRMSPCT = 1.966, PMEANPCT = 1.262

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PC
1201	268.613	13.7153	13.6942	.15	22.869	24.062	-5.2
1202	268.944	13.7150	13.6938	.15	24.394	25.593	-4.9
1203	269.313	13.7150	13.6925	.16	26.037	27.322	-4.9
1204	269.861	13.7143	13.6920	.16	28.565	29.850	-4.5
1205	270.539	13.7137	13.6907	.17	31.644	32.985	-4.2
1206	271.359	13.7130	13.6898	.17	35.412	36.785	-3.8
1207	272.788	13.7120	13.6880	.18	41.957	43.412	-3.4
1208	277.605	13.7080	13.6830	.18	64.048	65.686	-2.5
1209	281.789	13.7044	13.6813	.17	83.378	84.982	-1.9
1210	286.317	13.7007	13.6789	.16	104.232	105.845	-1.5
1211	290.328	13.6974	13.6772	.15	122.712	124.286	-1.2
1212	296.212	13.6924	13.6757	.12	149.866	151.270	-.94
1213	302.145	13.6874	13.6732	.10	177.132	178.410	-.72
1214	310.715	13.6804	13.6702	.07	216.504	217.506	-.46
1215	319.093	13.6734	13.6689	.03	255.083	255.564	-.19
1216	334.225	13.6608	13.6605	.00	323.892	323.929	-.01
1301	256.613	14.5544	14.5385	.11	19.044	20.362	-6.92
1302	257.326	14.5537	14.5365	.12	22.901	24.344	-6.30
1303	257.911	14.5534	14.5355	.12	26.113	27.627	-5.80
1304	259.065	14.5524	14.5348	.12	32.560	34.071	-4.64
1305	263.450	14.5484	14.5312	.12	56.915	58.486	-2.76
1306	268.631	14.5437	14.5261	.12	85.525	87.234	-2.00
1307	273.496	14.5391	14.5254	.09	112.695	114.101	-1.25
1308	283.116	14.5304	14.5205	.07	165.879	167.013	-.68
1309	291.287	14.5231	14.5158	.05	210.784	211.687	-.43
1310	298.372	14.5168	14.5119	.03	249.591	250.232	-.26
1311	307.254	14.5088	14.5063	.02	297.045	298.297	-.12
1312	319.529	14.4978	14.4964	.01	364.059	364.286	-.06
1401	249.192	15.0486	15.0289	.13	21.022	22.055	-4.15
1402	250.249	15.0476	15.0278	.13	26.564	28.629	-7.78
1403	253.374	15.0446	15.0256	.13	45.992	48.048	-4.47
1404	258.654	15.0396	15.0223	.12	78.728	80.725	-2.54
1405	265.858	15.0329	15.0191	.09	123.345	125.082	-1.41
1406	272.972	15.0263	15.0145	.08	167.038	168.610	-.94
1407	279.035	15.0206	15.0105	.07	204.280	205.510	-.70
1408	285.189	15.0146	15.0062	.06	241.489	242.746	-.52
1409	294.840	15.0057	15.0002	.04	299.962	301.846	-.29
1410	304.470	14.9967	14.9917	.03	357.549	358.402	-.24
1411	316.744	14.9852	14.9917	-.04	432.383	431.143	.29
1501	241.249	15.4543	15.4436	.07	13.638	14.922	-9.42
1502	241.891	15.4536	15.4432	.07	16.027	19.291	-7.31
1503	243.148	15.4523	15.4423	.06	26.636	27.832	-4.63
1504	246.661	15.4490	15.4378	.07	49.822	51.275	-2.92
1505	251.930	15.4436	15.4363	.05	86.273	87.263	-1.15
1506	257.186	15.4386	15.4345	.03	122.011	122.602	-.48
1507	261.745	15.4347	15.4323	.01	152.813	153.111	-.20
1508	267.242	15.4287	15.4300	-.01	188.866	189.656	.11
1509	273.834	15.4223	15.4249	-.02	233.738	233.308	.18
1510	282.799	15.4137	15.4184	-.03	293.088	292.263	.28
1511	290.022	15.4067	15.4114	-.03	340.314	339.433	.26
1512	298.219	15.3987	15.4042	-.04	393.682	392.614	.27
1513	309.559	15.3878	15.3933	-.04	466.789	465.624	.25

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PC.
1601	230.294	16.0362	16.0188	.11	9.965	12.583	-26.27
1602	230.807	16.0359	16.0186	.11	13.973	16.583	-18.68
1603	232.572	16.0339	16.0186	.10	27.840	30.199	-8.47
1604	234.160	16.0323	16.0167	.10	40.005	42.442	-6.09
1605	235.255	16.0313	16.0161	.09	48.499	50.894	-4.94
1606	242.791	16.0236	16.0115	.08	106.582	108.632	-1.92
1607	249.107	16.0172	16.0083	.05	155.042	156.590	-1.00
1608	254.888	16.0113	16.0035	.05	198.800	200.205	-.71
1609	262.164	16.0037	15.9989	.03	253.808	254.760	-.38
1610	271.236	15.9943	15.9884	.04	320.920	322.177	-.39
1611	279.282	15.9860	15.9815	.03	380.442	381.454	-.27
1612	286.940	15.9781	15.9741	.02	436.516	437.436	-.21
1613	294.543	15.9704	15.9667	.02	491.788	492.690	-.18
1614	301.325	15.9638	15.9557	.05	537.420	539.47.	-.38
1701	230.291	16.4154	16.3813	.21	70.101	76.398	-8.98
1702	237.396	16.4077	16.3775	.18	129.495	135.375	-4.54
1703	252.785	16.3911	16.3657	.15	255.712	261.332	-2.21
1704	259.848	16.3838	16.3586	.15	312.610	318.465	-1.87
1705	267.602	16.3755	16.3504	.15	374.481	38..617	-1.64
1706	275.649	16.3668	16.3447	.13	438.898	444.579	-1.29
1707	282.466	16.3598	16.3376	.14	492.335	498.444	-1.24
1708	290.185	16.3485	16.3253	.14	575.74.	582.333	-1.15
1801	220.809	16.7478	16.7511	-.02	57.842	57.129	1.23
1802	226.902	16.7409	16.7490	-.05	112.526	110.891	1.53
1803	234.917	16.7323	16.7447	-.07	185.542	182.348	1.45
1804	243.045	16.7238	16.7365	-.08	257.383	254.174	1.25
1805	250.885	16.7147	16.7298	-.09	326.185	322.239	1.19
1806	260.378	16.7044	16.7205	-.10	408.368	403.979	1.07
1807	269.927	16.6937	16.7119	-.11	490.451	485.191	1.07
1808	278.130	16.6847	16.7.25	-.11	559.695	554.332	.96
1809	284.744	16.6776	16.6951	-.10	615.144	6..8.723	.88
1810	293.608	16.6681	16.6850	-.10	688.810	684.302	.80
1901	213.403	17.1194	17.1757	-.26	57.137	67.192	-17.63
1902	218.566	17.1134	17.1736	.24	107.535	117.227	-9.01
1903	227.134	17.1.38	17.1683	.21	189.971	198.656	-4.79
1904	233.700	17.1061	17.1624	.20	252.996	262.652	-3.58
1905	241.776	17.0971	17.1549	.19	328.959	338.113	-2.77
1906	251.549	17.0762	17.1464	.17	420.270	429.220	-2.13
1907	260.957	17.0655	17.1379	-.16	507.148	515.821	-1.73
1908	268.486	17.0569	17.1284	.18	574.395	584.348	-1.74
1909	281.494	17.0436	17.1159	.16	688. 35	692.743	-1.42
2001	204.756	17.5214	17.5222	-.00	76.814	76.827	.02
2002	210.931	17.5141	17.5189	-.03	143.419	142.184	.93
2003	220.998	17.5022	17.5118	-.06	2.1..281	247.030	1.15
2004	227.537	17.4945	17.5.47	-.06	313..113	314.959	.96
2005	235.067	17.4859	17.4977	-.07	388.313	392.155	.97
2006	242.759	17.4769	17.4886	-.07	473.341	468.931	.89
2007	249.071	17.4692	17.4814	-.07	537.459	538.163	-.13
2008	256.389	17.4609	17.4746	-.08	611. 31	6..6.127	.93
2009	263.603	17.4523	17.4653	-.09	685.214	677.044	.76
2101	198.667	17.9295	17.9252	.02	123....	124.351	-1.13
2102	205.509	17.9209	17.9188	.01	2..2.64.	203.304	-.33
2103	213.217	17.9115	17.9114	.00	291.132	291.193	-.02

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
2104	220.733	17.9022	17.9046	-.01	376.667	375.756	.24
2105	228.543	17.8929	17.8971	-.02	464.311	462.732	.34
2106	238.949	17.8799	17.8883	-.05	580.193	576.879	.57
2201	179.691	18.4416	18.4225	.10	43.417	50.004	-15.17
2202	192.793	18.4376	18.4207	.09	84.808	90.736	-7.05
2203	188.263	18.4307	18.4161	.08	156.732	162.080	-3.41
2204	195.148	18.4217	18.4081	.07	245.802	250.651	-1.97
2205	201.949	18.4131	18.4022	.06	332.786	337.197	-1.33
2206	208.686	18.4044	18.3960	.05	418.212	421.690	-.83
2207	215.452	18.3957	18.3891	.04	502.825	505.685	-.57
2208	222.108	18.3871	18.3834	.02	584.427	586.077	-.28
2209	227.036	18.3808	18.3788	.01	646.312	647.236	-.14
2210	229.121	18.3781	18.3777	.00	672.368	672.553	-.03
2301	160.437	18.8214	18.7897	.17	30.514	42.663	-39.82
2302	171.067	18.8194	18.7886	.16	54.233	66.207	-22.08
2303	173.679	18.8158	18.7871	.15	92.217	103.568	-12.32
2304	177.673	18.8104	18.7831	.15	149.285	160.378	-7.43
2305	183.136	18.8031	18.7764	.14	226.136	237.271	-4.97
2306	186.844	18.7955	18.7696	.14	305.443	316.632	-3.68
2307	195.448	18.7865	18.7631	.12	396.836	407.385	-2.66
2308	201.251	18.7788	18.7587	.11	476.851	486.267	-1.97
2309	206.784	18.7715	18.7506	.11	551.626	560.733	-1.83
2310	212.460	18.7639	18.7482	.08	628.513	636.253	-1.23
2311	217.337	18.7576	18.7420	.08	692.835	700.721	-1.14
2401	158.496	19.2241	19.2018	.12	26.162	38.819	-36.91
2402	159.577	19.2225	19.1993	.12	42.827	52.902	-23.53
2403	161.786	19.2206	19.2000	.11	62.930	72.037	-14.47
2404	163.656	19.2168	19.1977	.10	108.664	117.207	-7.86
2405	167.103	19.2122	19.1938	.11	161.358	171.097	-6.04
2406	172.270	19.2049	19.1853	.10	241.668	250.900	-3.81
2407	177.321	19.1979	19.1782	.10	318.533	328.034	-3.00
2408	183.160	19.1896	19.1726	.09	407.622	416.140	-2.09
2409	188.652	19.1819	19.1670	.08	490.353	498.075	-1.57
2410	194.552	19.1739	19.1614	.07	578.543	585.231	-1.16
2411	199.115	19.1673	19.1599	.04	647.704	651.710	-.62
2412	202.417	19.1630	19.1556	.05	694.537	699.734	-.75

NP = 141, DNPNSPCT = .107, PMEANPCT = 3.683

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
3501	296.000	11.2115	11.1847	.24	43.963	44.342	-.86
3502	300.000	11.1956	11.1537	.37	55.970	54.653	-1.27
3503	304.000	11.1727	11.1253	.42	63.948	64.819	-1.36
3504	308.000	11.1415	11.0933	.43	73.779	74.758	-1.33
3505	312.000	11.1157	11.0717	.40	83.744	84.726	-1.17
3506	316.000	11.0989	11.0595	.35	93.877	94.839	-1.02
3507	320.000	11.0867	11.0529	.30	104.137	105.035	-.86
2501	292.000	11.5223	11.5173	.04	38.113	38.195	-.22
2502	296.000	11.5052	11.4778	.24	48.686	49.138	-1.05
2503	300.000	11.4851	11.4553	.26	59.484	60.139	-1.05
2504	304.000	11.4547	11.4223	.28	69.985	70.730	-1.06
2505	308.000	11.4242	11.3883	.31	80.351	81.250	-1.12
2506	312.000	11.4039	11.3734	.27	91.114	91.944	-.91
2507	316.000	11.3902	11.3635	.23	101.982	102.771	-.77
2508	320.000	11.3799	11.3426	.33	112.485	113.668	-1.05
2601	288.000	12.1935	12.1750	.15	39.706	40.194	-1.23
2602	292.000	12.1732	12.1498	.19	52.158	52.837	-1.30
2603	296.000	12.1462	12.1207	.21	64.389	65.191	-1.25
2604	300.000	12.1092	12.0849	.20	76.275	77.089	-1.07
2605	304.000	12.0824	12.0622	.17	88.474	89.200	-.82
2606	308.000	12.0660	12.0490	.14	100.940	101.595	-.65
2607	312.000	12.0541	12.0411	.11	113.574	114.106	-.47
2608	316.000	12.0442	12.0345	.08	126.240	126.667	-.34
2609	320.000	12.0356	12.0304	.04	139.067	139.249	-.17
301	280.000	12.7873	12.7770	.08	29.758	30.121	-1.22
302	284.000	12.7681	12.7535	.11	43.982	44.539	-1.27
303	288.000	12.7449	12.7286	.13	58.026	58.692	-1.15
304	292.000	12.7171	12.6911	.13	71.396	72.086	-.97
305	296.000	12.6722	12.6598	.10	84.817	85.417	-.71
306	300.000	12.6519	12.6430	.07	98.845	99.275	-.43
307	304.000	12.6383	12.6328	.04	113.086	113.366	-.25
308	308.000	12.6275	12.6252	.02	127.418	127.542	-.10
309	312.000	12.6183	12.6194	-.01	141.819	141.752	.05
310	316.000	12.6124	12.6155	-.03	152.629	152.418	.14
311	320.000	12.6023	12.6097	-.06	170.663	170.194	.27
2301	276.000	13.2557	13.2441	.09	32.684	33.226	-1.66
2302	280.000	13.2336	13.2222	.09	48.428	48.994	-1.17
2303	284.000	13.2034	13.1919	.09	63.596	64.193	-.94
2304	288.000	13.1598	13.1506	.07	77.971	78.473	-.64
2305	292.000	13.1313	13.1267	.03	93.165	93.368	-.28
2306	296.000	13.1147	13.1129	.01	108.697	108.800	-.09
2307	300.000	13.1024	13.1037	-.01	124.490	124.407	.07
2308	300.000	13.1024	13.1037	-.01	124.489	124.407	.07
2309	304.000	13.0922	13.0965	-.03	140.362	140.078	.20
2310	308.000	13.0833	13.0902	-.05	156.258	155.772	.31
2311	312.000	13.0752	13.0849	-.07	172.177	171.466	.41
2312	316.000	13.0676	13.0792	-.09	188.145	187.151	.48
2313	320.000	13.0604	13.0753	-.11	204.014	202.817	.59
3601	272.000	13.6696	13.6532	.12	36.257	37.207	-2.62
3602	276.000	13.6438	13.6295	.11	53.267	54.147	-1.65
3603	280.000	13.6044	13.5915	.10	69.195	70.019	-1.19
3604	284.000	13.5626	13.5537	.07	84.884	85.471	-.69

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
3605	288.000	13.5399	13.5352	.03	101.657	101.976	-.31
3606	292.000	13.5252	13.5233	.01	118.771	118.908	-.11
3607	296.000	13.5138	13.5146	-.01	136.040	135.976	.05
3608	300.000	13.5040	13.5076	-.03	153.377	153.091	.19
3609	304.000	13.4953	13.5041	-.06	170.942	170.211	.43
3610	308.000	13.4872	13.4985	-.08	188.310	187.329	.52
3611	312.000	13.4796	13.4933	-.10	205.666	204.427	.60
3612	316.000	13.4724	13.4884	-.12	223.004	221.499	.67
3613	320.000	13.4655	13.4837	-.14	240.318	238.542	.74
2201	268.000	13.8835	13.8727	.08	30.548	31.234	-2.25
2202	272.000	13.8593	13.8519	.06	48.506	49.067	-1.16
2203	276.000	13.8242	13.8172	.05	65.457	65.941	-.74
2204	280.000	13.7775	13.7745	.02	81.526	81.742	-.27
2205	284.000	13.7510	13.7525	-.01	98.840	98.732	.11
2206	288.000	13.7351	13.7394	-.03	116.682	116.347	.29
2207	292.000	13.7230	13.7296	-.05	134.688	134.151	.40
2208	296.000	13.7129	13.7217	-.06	152.773	152.021	.49
2209	300.000	13.7039	13.7151	-.08	170.906	169.935	.59
2210	304.000	13.6956	13.7089	-.10	189.013	187.783	.65
2211	308.000	13.6879	13.7034	-.11	207.132	205.641	.72
2212	312.000	13.6805	13.6982	-.13	225.240	223.470	.79
2213	316.000	13.6734	13.6932	-.14	243.313	241.266	.84
2214	320.000	13.6666	13.6878	-.16	261.354	259.027	.87
2401	264.000	14.0847	14.0773	.05	24.038	24.543	-2.10
2402	268.000	14.0623	14.0534	.06	42.653	43.293	-1.50
2403	272.000	14.0321	14.0243	.06	60.679	61.255	-.95
2404	276.000	13.9833	13.9786	.03	77.197	77.560	-.47
2405	280.000	13.9509	13.9517	-.01	94.690	94.824	.07
2406	284.000	13.9330	13.9371	-.03	113.395	113.048	.31
2407	288.000	13.9201	13.9259	-.04	132.063	131.557	.38
2408	292.000	13.9095	13.9173	-.06	150.863	150.157	.47
2409	296.000	13.9001	13.9102	-.07	169.735	168.781	.56
2410	300.000	13.8916	13.9040	-.09	188.621	187.402	.65
2411	304.000	13.8837	13.8979	-.10	207.454	206.004	.70
2412	308.000	13.8761	13.8924	-.12	226.296	224.574	.76
2413	312.000	13.8689	13.8872	-.13	245.119	243.110	.82
2414	316.000	13.8619	13.8821	-.15	263.890	261.606	.87
2415	320.000	13.8551	13.8767	-.16	282.588	280.060	.89
1001	260.000	14.4140	14.4027	.08	26.858	27.760	-3.36
1002	264.000	14.3890	14.3793	.07	46.766	47.577	-1.73
1003	268.000	14.3515	14.3444	.05	65.471	66.082	-.93
1004	272.000	14.3021	14.2988	.02	82.942	83.228	-.35
1005	276.000	14.2753	14.2767	-.01	102.212	102.084	.13
1006	280.000	14.2593	14.2636	-.03	122.137	121.724	.34
1007	284.000	14.2471	14.2538	-.05	142.261	141.593	.47
1008	288.000	14.2368	14.2455	-.06	162.439	161.536	.56
1009	292.000	14.2276	14.2382	-.08	182.640	181.494	.63
1010	296.000	14.2191	14.2317	-.09	202.846	201.438	.69
1011	300.000	14.2112	14.2256	-.10	223.018	221.354	.75
1012	304.000	14.2036	14.2196	-.11	243.137	241.234	.78
1013	308.000	14.1964	14.2140	-.12	263.246	261.064	.83
1014	312.000	14.1893	14.2084	-.13	283.286	280.848	.86
1015	316.000	14.1825	14.2027	-.14	303.236	300.582	.87

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
1016	320.000	14.1758	14.1973	-.15	323.174	32..263	.9.
3201	252.000	14.8111	14.8097	.01	15.930	16.056	-.8.
3202	256.000	14.7904	14.7803	.07	37.062	38.032	-2.61
3203	260.000	14.7572	14.7518	.04	57.990	58.525	-.92
3204	264.000	14.7045	14.7031	.01	76.561	76.718	-.20
3205	268.000	14.6686	14.6727	-.03	96.680	96.244	.45
3206	272.000	14.6497	14.6569	-.05	118.077	117.297	.66
3207	276.000	14.6362	14.6457	-.07	139.836	138.761	.77
3208	280.000	14.6251	14.6363	-.08	161.653	160.355	.80
3209	284.000	14.6154	14.6284	-.09	183.557	181.982	.86
3210	288.000	14.6066	14.6215	-.10	205.476	203.600	.91
3211	292.000	14.5983	14.6153	-.12	227.394	225.186	.97
3212	296.000	14.5906	14.6056	-.10	248.761	246.742	.81
3213	300.000	14.5830	14.6025	-.13	270.931	268.224	1.00
3214	304.000	14.5757	14.5965	-.14	292.629	289.661	1.01
3215	308.000	14.5686	14.5906	-.15	314.261	311.037	1.03
3216	312.000	14.5617	14.5847	-.16	335.824	332.352	1.03
2101	248.000	15.0780	15.0764	.01	17.380	17.553	-.99
2102	252.000	15.0555	15.0480	.05	39.746	40.560	-2.05
2103	256.000	15.0180	15.0159	.01	61.397	61.624	-.37
2104	260.000	14.9628	14.9655	-.02	82.037	82.331	.38
2105	264.000	14.9313	14.9395	-.05	102.294	101.342	.93
2106	268.000	14.9138	14.9248	-.07	125.033	123.710	1.06
2107	272.000	14.9008	14.9138	-.09	148.065	146.439	1.10
2108	276.000	14.8899	14.9048	-.10	171.196	169.283	1.12
2109	280.000	14.8803	14.8970	-.11	194.376	192.147	1.15
2110	284.000	14.8715	14.8896	-.12	217.565	214.998	1.15
2111	288.000	14.8632	14.8826	-.13	240.580	237.807	1.15
2112	292.000	14.8553	14.8763	-.14	263.645	260.566	1.17
2113	296.000	14.8478	14.8689	-.14	286.475	283.268	1.12
2114	300.000	14.8405	14.8635	-.16	309.501	305.900	1.16
2115	304.000	14.8333	14.8573	-.16	332.309	328.467	1.16
2116	308.000	14.8264	14.8510	-.17	355.024	350.964	1.14
401	240.000	15.5148	15.5063	.06	12.548	13.604	-8.41
402	244.000	15.4872	15.4733	.09	36.366	38.127	-4.84
403	248.000	15.4494	15.4413	.05	59.925	60.979	-1.76
404	252.000	15.3916	15.3881	.02	80.324	80.780	-.57
405	256.000	15.3582	15.3609	-.02	103.740	103.386	.34
406	260.000	15.3402	15.3457	-.04	128.526	127.753	.60
407	264.000	15.3268	15.3346	-.05	153.689	152.568	.73
408	268.000	15.3157	15.3252	-.06	178.943	177.523	.79
409	272.000	15.3059	15.3171	-.07	204.232	202.506	.85
410	276.000	15.2968	15.3094	-.08	229.462	227.469	.87
411	280.000	15.2884	15.3021	-.09	254.635	252.384	.88
412	284.000	15.2803	15.2951	-.10	279.731	277.238	.89
413	288.000	15.2726	15.2881	-.10	304.719	302.021	.89
414	292.000	15.2651	15.2816	-.11	329.673	326.725	.89
415	296.000	15.2578	15.2749	-.11	354.484	351.350	.88
4901	240.000	15.5860	15.5816	.03	22.021	22.591	-2.59
4902	244.000	15.5564	15.5532	.02	46.703	47.124	-.90
4903	248.000	15.5078	15.5092	-.01	68.908	68.719	.27
4904	252.000	15.4567	15.4642	-.05	90.553	89.521	1.14
4905	256.000	15.4328	15.4446	-.08	115.324	113.662	1.44

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
4906	260.000	15.4174	15.4314	-.09	140.785	138.743	1.45
4907	264.000	15.4053	15.4216	-.10	166.466	164.090	1.43
4908	268.000	15.3948	15.4127	-.12	192.356	189.511	1.45
4909	272.000	15.3853	15.4047	-.13	218.042	214.936	1.42
4910	276.000	15.3765	15.3978	-.14	243.837	240.322	1.44
4911	280.000	15.3682	15.3907	-.15	269.472	265.652	1.42
4912	284.000	15.3603	15.3835	-.15	294.971	290.914	1.38
4913	288.000	15.3527	15.3768	-.16	320.446	316.096	1.36
2001	232.000	15.9501	15.9469	.02	12.667	13.125	-3.62
2002	236.000	15.9203	15.9133	.04	38.508	39.563	-2.74
2003	240.000	15.8767	15.8760	.00	63.368	63.462	-.15
2004	244.000	15.8173	15.8231	-.04	85.355	84.452	1.06
2005	248.000	15.7880	15.7989	-.07	111.353	109.630	1.55
2006	252.000	15.7709	15.7846	-.09	138.649	136.408	1.62
2007	256.000	15.7579	15.7736	-.10	166.249	163.610	1.59
2008	260.000	15.7468	15.7642	-.11	193.947	190.940	1.55
2009	264.000	15.7370	15.7556	-.12	221.619	218.297	1.50
2010	268.000	15.7278	15.7478	-.13	249.268	245.607	1.47
2011	272.000	15.7193	15.7401	-.13	276.780	272.851	1.42
2012	276.000	15.7111	15.7325	-.14	304.166	300.026	1.36
2013	280.000	15.7033	15.7254	-.14	331.520	327.112	1.33
2014	284.000	15.6956	15.7182	-.14	358.724	354.106	1.29
3401	228.000	16.1977	16.1927	.03	18.552	19.366	-4.39
3402	232.000	16.1667	16.1604	.04	45.825	46.874	-2.29
3403	236.000	16.1144	16.1126	.01	70.349	70.341	-.42
3404	240.000	16.0623	16.0676	-.03	94.209	93.308	.96
3405	244.000	16.0385	16.0478	-.06	122.246	120.623	1.33
3406	248.000	16.0229	16.0345	-.07	151.129	149.062	1.37
3407	252.000	16.0105	16.0240	-.08	180.296	177.816	1.38
3408	256.000	15.9998	16.0147	-.09	209.491	206.661	1.35
3409	260.000	15.9901	16.0063	-.10	238.662	235.499	1.33
3410	264.000	15.9810	15.9981	-.11	267.721	264.293	1.28
3411	268.000	15.9725	15.9904	-.11	296.684	293.006	1.24
3412	272.000	15.9643	15.9828	-.12	325.542	321.634	1.20
3413	276.000	15.9565	15.9756	-.12	354.305	350.154	1.17
901	220.000	16.5668	16.5644	.01	14.301	14.748	-3.13
902	224.000	16.5359	16.5301	.03	43.322	44.452	-2.49
903	228.000	16.4831	16.4821	.01	69.228	69.412	-.27
904	232.000	16.4281	16.4343	-.04	94.583	93.396	1.25
905	236.000	16.4034	16.4139	-.06	124.747	122.685	1.65
906	240.000	16.3874	16.4005	-.08	155.972	153.326	1.70
907	244.000	16.3747	16.3896	-.09	187.424	184.350	1.64
908	248.000	16.3638	16.3799	-.10	218.965	215.479	1.57
909	252.000	16.3539	16.3712	-.11	250.394	246.606	1.51
910	256.000	16.3447	16.3627	-.11	281.716	277.667	1.44
911	260.000	16.3360	16.3546	-.11	312.936	308.647	1.37
912	264.000	16.3276	16.3466	-.12	343.986	339.521	1.30
3701	216.000	16.7975	16.7930	.05	21.043	22.564	-7.23
3702	220.000	16.7612	16.7554	.03	51.249	52.443	-2.33
3703	224.000	16.6985	16.6976	.01	76.124	76.307	-.24
3704	228.000	16.6542	16.6613	-.04	104.762	103.347	1.35
3705	232.000	16.6331	16.6433	-.06	136.904	134.731	1.59
3706	236.000	16.6183	16.6305	-.07	169.765	167.088	1.58

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
3707	240.000	16.6061	16.6197	-.08	202.787	199.733	1.51
3708	244.000	16.5953	16.6103	-.09	235.869	232.342	1.50
3709	248.000	16.5856	16.6012	-.09	268.798	265.119	1.37
3710	252.000	16.5765	16.5925	-.10	301.617	297.725	1.29
3711	256.000	16.5678	16.5840	-.10	334.255	330.228	1.20
1902	212.000	17.0476	17.0361	.07	34.269	36.820	-7.45
1903	216.000	16.9980	16.9935	.03	64.056	65.064	-1.58
1904	220.000	16.9335	16.9365	-.02	89.984	89.300	.76
1905	224.000	16.9144	16.9125	-.05	122.714	120.870	1.50
1906	228.000	16.8870	16.8976	-.06	157.164	154.672	1.59
1907	232.000	16.8735	16.8859	-.07	192.025	189.051	1.55
1908	236.000	16.8621	16.8754	-.08	226.904	223.595	1.46
1909	240.000	16.8517	16.8667	-.08	261.772	258.149	1.38
1910	244.000	16.8421	16.8569	-.09	296.476	292.643	1.29
1911	248.000	16.8331	16.8482	-.09	331.044	327.032	1.21
201	200.000	17.4448	17.4519	-.04	6.801	5.061	25.58
202	204.000	17.4111	17.4024	.05	37.760	39.920	-5.72
203	208.000	17.3535	17.3532	.00	68.033	68.119	-.13
204	212.000	17.2928	17.2999	-.04	96.570	94.762	1.87
205	216.000	17.2666	17.2777	-.06	132.349	129.468	2.18
206	220.000	17.2498	17.2632	-.08	169.669	166.132	2.08
207	224.000	17.2366	17.2511	-.08	207.255	203.332	1.89
208	228.000	17.2251	17.2403	-.09	244.895	240.675	1.72
209	232.000	17.2147	17.2302	-.09	282.402	278.007	1.56
210	236.000	17.2051	17.2208	-.09	319.811	315.254	1.42
211	240.000	17.1961	17.2117	-.09	357.046	352.376	1.31
3901	196.000	17.6192	17.6197	-.00	4.943	4.814	2.61
3902	200.000	17.5613	17.5657	.09	35.738	39.838	-11.47
3903	204.000	17.5236	17.5180	.03	67.420	68.385	-2.17
3904	208.000	17.4609	17.4638	-.02	96.616	95.842	.80
3905	212.000	17.4342	17.4413	-.04	133.583	131.664	1.44
3906	216.000	17.4172	17.4266	-.05	172.225	169.624	1.51
3907	220.000	17.4039	17.4142	-.06	211.113	208.164	1.40
3908	224.000	17.3923	17.4035	-.06	250.127	246.853	1.31
3909	228.000	17.3818	17.3932	-.07	288.946	285.534	1.18
3910	232.000	17.3721	17.3832	-.06	327.523	324.129	1.04
1801	192.000	17.8154	17.8099	.03	9.865	11.396	-15.51
1802	196.000	17.7748	17.7660	.05	44.533	47.012	-5.57
1803	200.000	17.7094	17.7063	.02	73.933	74.809	-1.18
1804	204.000	17.6575	17.6623	-.03	106.983	105.608	1.29
1805	208.000	17.6344	17.6424	-.05	146.253	143.921	1.59
1806	212.000	17.6185	17.6281	-.05	186.673	183.812	1.53
1807	216.000	17.6055	17.6161	-.06	227.370	224.147	1.42
1808	220.000	17.5942	17.6053	-.06	268.053	264.580	1.30
1809	224.000	17.5838	17.5951	-.06	308.565	304.974	1.16
1810	228.000	17.5741	17.5852	-.06	348.859	345.258	1.03
4001	188.000	18.0211	18.0125	.05	19.817	22.395	-13.01
4002	192.000	17.9765	17.9692	.04	55.964	58.169	-3.94
4003	196.000	17.9132	17.9129	.00	84.330	84.416	-.10
4004	200.000	17.8657	17.8713	-.03	122.367	120.657	1.40
4005	204.000	17.8459	17.8538	-.04	164.076	161.626	1.49
4006	208.000	17.8311	17.8402	-.05	206.552	203.659	1.40
4007	212.000	17.8187	17.8282	-.05	249.088	245.994	1.24

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
4108	216.000	17.8776	17.8171	-.35	291.542	288.367	1.09
4109	220.000	17.7975	17.8057	-.05	333.471	333.678	.84
701	180.000	18.2950	18.2955	-.00	5.247	5.100	2.81
702	184.000	18.2532	18.2397	.07	39.724	44.136	-11.09
703	188.000	18.1855	18.1813	.03	72.958	73.771	-2.38
704	192.000	18.1284	18.1317	-.01	106.669	105.927	.70
705	196.000	18.1035	18.1091	-.03	149.662	147.925	1.16
706	200.000	18.0873	18.0937	-.04	194.175	191.977	1.13
707	204.000	18.0738	18.0819	-.04	239.051	236.587	1.03
708	208.000	18.0621	18.0690	-.04	283.791	281.328	.87
709	212.000	18.0514	18.0585	-.04	328.419	326.019	.73
4101	176.000	18.4884	18.4757	.07	11.373	15.447	-39.51
4102	180.000	18.4423	18.4283	.08	49.583	54.433	-9.78
4103	184.000	18.3682	18.3597	.05	79.794	82.731	-3.68
4104	188.000	18.3232	18.3220	.01	119.718	120.138	-.35
4105	192.000	18.3017	18.3124	-.06	165.186	164.914	.16
4106	196.000	18.2861	18.2871	-.01	211.586	211.202	.18
4107	200.000	18.2731	18.2747	-.01	258.517	257.877	.25
4108	204.000	18.2620	18.2553	.04	302.305	304.811	-.83
4109	208.000	18.2510	18.2498	.01	350.871	351.337	-.13
1701	172.000	18.6504	18.6399	.06	12.449	16.229	-30.37
1702	176.000	18.6016	18.5921	.05	52.091	55.592	-6.72
1703	180.000	18.5249	18.5222	.01	82.782	83.755	-1.18
1704	184.000	18.4834	18.4865	-.02	124.306	123.686	.50
1705	188.000	18.4625	18.4672	-.03	172.059	170.302	1.02
1706	192.000	18.4476	18.4523	-.03	221.356	218.326	.91
1707	196.000	18.4340	18.4396	-.03	268.668	266.746	.72
1708	200.000	18.4225	18.4269	-.02	316.945	315.203	.55
1709	204.000	18.4119	18.4152	-.02	364.896	363.556	.37
4801	168.000	18.8173	18.8113	.03	17.297	19.580	-13.20
4802	172.000	18.7683	18.7615	.03	57.607	60.085	-4.30
4803	176.000	18.6917	18.6906	.00	88.759	88.814	-.06
4804	180.000	18.6551	18.6567	-.01	133.001	132.392	.46
4805	184.000	18.6356	18.6389	-.02	182.646	181.119	.84
4806	188.000	18.6197	18.6252	-.03	235.273	231.092	.93
4807	192.000	18.6163	18.6118	-.03	283.464	281.451	.71
4808	196.000	18.5954	18.5999	-.02	333.677	331.798	.56
502	162.000	19.0867	19.0542	.07	20.818	26.102	-25.38
503	164.000	19.0429	19.0303	.07	42.580	47.811	-12.28
504	166.000	19.0111	19.0012	.05	61.905	66.015	-6.64
505	168.000	18.9685	18.9611	.04	76.437	79.473	-3.97
506	170.000	18.9351	18.9324	.01	95.319	96.421	-1.16
507	172.000	18.9159	18.9154	.00	118.776	118.974	-.17
508	176.000	18.8924	18.8935	-.01	169.907	169.475	.25
509	180.000	18.8758	18.8771	-.01	222.663	222.086	.25
510	184.000	18.8622	18.8626	-.00	275.482	275.280	.07
511	188.000	18.8501	18.8496	.00	328.340	328.551	-.06
1601	152.000	19.4242	19.4183	.03	12.079	14.788	-22.42
1602	156.000	19.3690	19.3636	.03	55.978	58.433	-4.39
1603	160.000	19.2877	19.2894	-.01	89.635	88.868	.86
1604	164.000	19.2501	19.2558	-.03	140.474	137.891	1.84
1605	168.000	19.2295	19.2357	-.03	196.507	193.641	1.46
1606	172.000	19.2139	19.2193	-.03	253.400	250.855	1.00

Table 12. Continued.

EQUATION OF STATE vs. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
1607	176.000	19.2[illegible]8	19.2046	-.02	310.365	308.427	.62
1608	180.000	19.1887	19.1916	-.01	367.092	365.981	.30
801	144.000	19.7216	19.7164	.03	9.387	12.062	-28.52
802	148.000	19.6674	19.6536	.05	54.489	59.151	-8.56
803	152.000	19.5841	19.5816	.01	89.245	90.491	-1.40
804	156.000	19.5451	19.5462	-.01	142.846	142.286	.39
805	160.000	19.5240	19.5257	-.00	232.324	231.833	.21
806	164.000	19.5[illegible]8	19.5[illegible]7	.00	262.865	263.[illegible]	-.04
807	168.000	19.4945	19.4923	.01	325.436	324.576	.26
808	172.000	19.4823	19.4779	.02	385.722	386.108	-.10
1501	136.000	20.1297	20.0249	.52	13.689	16.292	-19.01
1502	138.000	20.0082	19.9953	.06	57.831	44.870	-18.61
1503	140.000	19.9727	19.9639	.04	61.574	64.981	-7.28
1504	142.000	19.9261	19.9206	.03	76.559	79.475	-3.81
1505	144.000	19.8898	19.8891	.00	98.468	98.846	-.39
1506	148.000	19.8558	19.8569	-.01	157.716	157.127	.37
1507	152.000	19.8356	19.8358	-.00	221.746	221.674	.03
1508	156.000	19.8199	19.8187	.01	286.589	287.620	-.36
1509	160.000	19.8063	19.8022	.02	351.468	353.855	-.68
601	128.000	20.3118	20.3099	.01	6.715	7.774	-15.78
602	130.000	20.2873	20.2747	.06	29.285	36.687	-25.27
603	132.000	20.2539	20.2455	.04	54.980	59.908	-8.96
604	134.000	20.2[illegible]1	20.2129	.03	72.368	75.933	-4.93
605	136.000	20.1674	20.1656	.01	92.490	93.516	-1.11
606	138.000	20.1438	20.1446	-.00	121.248	121.133	.09
607	140.000	20.1286	20.1289	-.00	153.375	153.221	.10
608	142.000	20.1169	20.1171	-.00	187.[illegible]24	186.979	.02
609	144.000	20.1071	20.1063	.00	221.394	221.566	-.21
610	146.000	20.0985	20.0985	.01	255.319	256.557	-.48
611	148.000	20.0907	20.0873	.02	289.678	291.747	-.71
612	150.000	20.0835	20.0787	.02	324.[illegible]9	327.[illegible]8	-.9[illegible]
613	152.000	20.0767	20.0702	.03	358.308	362.302	-1.11
1401	120.000	20.6206	20.615[illegible]	.03	12.747	16.368	-28.41
1402	122.000	20.5923	20.5824	.05	38.864	45.012	-16.42
1403	124.000	20.5527	20.5473	.03	62.436	65.864	-5.49
1404	126.000	20.5145	20.5019	.01	79.236	80.863	-2.05
1405	128.000	20.4695	20.4711	-.01	104.787	103.778	.96
1406	130.000	20.4499	20.4524	-.01	137.499	135.948	1.13
1407	132.000	20.4361	20.4383	-.01	172.765	171.39[illegible]	.80
1408	134.000	20.4252	20.4262	-.01	208.[illegible]65	208.213	.33
1409	136.000	20.4157	20.4154	.00	245.518	245.693	-.07
1410	138.000	20.4073	20.4055	.01	282.309	283.498	-.42
1411	140.000	20.3996	20.3964	.02	319.[illegible]91	321.447	-.74
1412	142.000	20.3924	20.3869	.03	355.822	359.455	-1.02
3801	116.000	20.7756	20.7719	.02	19.636	22.[illegible]81	-12.45
3802	120.000	20.7020	20.6998	.01	68.130	69.591	-2.14
3803	124.000	20.6265	20.6311	-.02	110.827	113.739	2.59
3804	128.000	20.5967	20.6005	-.02	108.911	180.321	1.37
3805	132.000	20.5770	20.5779	-.00	264.639	264.[illegible]77	.21
3806	136.000	20.5612	20.5578	.02	340.682	343.[illegible]20	-.69
1101	112.000	20.9108	20.9067	.02	11.911	14.794	-24.2[illegible]
1102	114.000	20.8819	20.8727	.04	36.739	45.15[illegible]	-18.65
1103	116.000	20.8436	20.8360	.02	63.156	66.336	-5.04

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
1104	118.000	20.7914	20.7897	.01	80.478	81.635	-1.50
1105	120.000	20.7568	20.7596	-.01	108.020	106.519	1.39
1106	122.000	20.7374	20.7400	-.01	142.998	141.206	1.25
1107	124.000	20.7236	20.7253	-.01	180.492	179.322	.65
1108	126.000	20.7124	20.7136	-.01	219.553	218.756	.36
1109	128.000	20.7029	20.7024	.00	258.617	259.956	-.13
1110	130.000	20.6944	20.6920	.01	297.809	299.485	-.56
1111	132.000	20.6865	20.6820	.02	336.963	340.165	-.95
1301	108.000	21.0651	21.0614	.02	18.227	20.913	-14.73
1302	110.000	21.0339	21.0288	.02	47.101	50.765	-7.78
1303	112.000	20.9897	20.9866	.01	66.417	70.599	-3.19
1304	114.000	20.9418	20.9429	-.01	88.149	87.312	.95
1305	116.000	20.9133	20.9170	-.02	120.035	117.365	2.22
1306	118.000	20.8960	20.8998	-.02	157.492	154.936	1.62
1307	120.000	20.8832	20.8856	-.01	196.919	195.171	.89
1308	122.000	20.8725	20.8734	-.00	237.193	236.559	.27
1309	124.000	20.8633	20.8620	.01	277.606	279.530	-.33
1310	126.000	20.8548	20.8517	.02	318.410	321.734	-.73
1311	128.000	20.8471	20.8417	.03	359.026	363.064	-1.12
4301	104.000	21.1984	21.1982	.00	11.828	11.960	-1.12
4302	108.000	21.1246	21.1243	.00	64.514	64.710	-.31
4303	112.000	21.0411	21.0476	-.03	112.851	108.066	4.24
4304	116.000	21.0085	21.0138	-.03	190.660	186.709	2.07
4305	118.000	20.9973	21.0011	-.02	232.117	229.139	1.24
4306	120.000	20.9877	20.9894	-.01	273.594	272.283	.48
4307	122.000	20.9790	20.9785	.00	315.311	315.752	-.14
101	100.000	21.3435	21.3572	-.06	22.502	11.704	47.99
102	102.000	21.3130	21.3196	-.03	49.527	44.387	10.38
103	104.000	21.2664	21.2747	-.04	70.257	63.831	9.15
104	106.000	21.2192	21.2315	-.06	91.854	82.398	10.29
105	108.000	21.1922	21.2061	-.07	126.546	115.870	8.44
106	110.000	21.1749	21.1954	-.07	168.214	156.205	7.14
107	112.000	21.1624	21.1755	-.06	209.887	199.676	4.86
108	114.000	21.1516	21.1633	-.06	253.227	244.086	3.61
109	116.000	21.1425	21.1501	-.04	295.247	289.279	2.02
110	100.000	21.3475	21.3515	-.02	17.991	14.864	17.38
111	102.000	21.3151	21.3176	-.01	47.964	46.003	4.09
112	104.000	21.2685	21.2738	-.03	69.584	65.441	5.95
113	106.000	21.2208	21.2299	-.04	90.567	83.633	7.66
114	108.000	21.1931	21.2038	-.05	124.816	116.546	6.62
115	110.000	21.1760	21.1860	-.05	164.766	157.053	4.68
116	112.000	21.1631	21.1717	-.04	206.898	200.235	3.22
117	114.000	21.1524	21.1588	-.03	249.715	244.643	2.03
118	116.000	21.1436	21.1470	-.02	292.820	289.618	1.09
1202	94.000	21.5994	21.5903	.04	35.870	43.435	-21.26
1203	96.000	21.5554	21.5512	.02	68.091	66.536	-5.54
1204	98.000	21.5033	21.5026	.00	81.653	82.402	-.67
1205	100.000	21.4677	21.4726	-.01	113.755	111.385	2.08
1206	102.000	21.4478	21.4506	-.01	154.890	152.528	1.52
1207	104.000	21.4335	21.4351	-.01	199.098	197.784	.66
1208	106.000	21.4220	21.4214	.00	244.329	244.754	-.17
1209	108.000	21.4120	21.4090	.01	290.345	292.502	-.85
1210	110.000	21.4030	21.3973	.03	335.810	340.638	-1.44

Table 12. Continued.

EQUATION OF STATE VS. PVT DATA

ID	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
4701	93.000	21.6622	21.6371	-.12	87.370	83.643	4.81
4702	94.000	21.6637	21.6715	-.04	104.984	98.241	6.42
4703	96.000	21.6408	21.6491	-.04	146.217	139.125	4.85
4704	98.000	21.6250	21.6323	-.03	191.732	185.715	3.14
4705	100.000	21.6131	21.6178	-.02	238.094	234.535	1.74
4706	102.000	21.6028	21.6038	-.00	285.382	284.499	.31
4707	104.000	21.5936	21.5902	.02	331.959	334.958	-.90

NP = 430, DNRMSPCT = .091, PMEANPCT = 2.661

Table 13. Heats of vaporization and closure computation.

LOOP CLOSURE CHECK FOR SATURATED LIQUID,
ENTHALPY HLR VIA NBS CV, HLC VIA CLAPEYRON EQN., J/MOL

T,K	HLR	HLC	DIF	Q,VAP	DH/Q,PCT
95	5634	5687	53	17696	.30
100	5975	6016	40	17553	.23
105	6313	6352	34	17402	.20
110	6661	6694	33	17246	.19
115	7004	7039	35	17086	.20
120	7349	7387	38	16924	.23
125	7694	7737	43	16761	.26
130	8039	8088	49	16597	.30
135	8386	8441	54	16432	.33
140	8734	8793	59	16266	.37
145	9082	9147	64	16099	.40
150	9433	9500	67	15931	.43
155	9784	9855	70	15761	.45
160	10138	10211	72	15589	.47
165	10493	10567	74	15415	.48
170	10851	10925	74	15237	.49
175	11211	11285	74	15055	.50
180	11573	11647	73	14869	.50
185	11939	12012	72	14677	.49
190	12308	12379	71	14478	.49
195	12681	12750	69	14272	.49
200	13057	13124	67	14058	.48
205	13438	13503	65	13834	.47
210	13823	13887	63	13599	.47
215	14213	14276	62	13353	.47
220	14609	14671	61	13094	.47
225	15011	15073	61	12821	.48
230	15420	15481	61	12533	.49
235	15836	15898	61	12227	.51
240	16260	16323	62	11902	.53
245	16693	16758	64	11556	.56
250	17137	17203	65	11186	.59
255	17591	17659	67	10791	.63
260	18061	18128	67	10365	.65
265	18547	18612	65	9905	.66
270	19050	19113	62	9406	.67
275	19575	19634	59	8857	.67
280	20126	20181	54	8249	.67
285	20711	20759	48	7561	.64
290	21343	21383	39	6763	.59
295	22049	22077	27	5793	.47
300	22900	22907	6	4487	.15

Table 14. Comparison with specific heats, $C_v(\rho,T)$, from H. M. Roder.

ETHANE SPECIFIC HEATS CV(D,T), J/MOL/K

ID	MOL/L	T,K	P,BAR	CV,XPT	CALCD	PCNT
1901	1.585	288.868	27.137	49.30	48.22	2.18
1902	1.585	292.068	27.702	49.21	48.33	1.78
1903	1.585	295.282	28.267	48.28	48.48	-.41
1904	1.585	299.364	28.978	48.87	48.70	.35
1905	1.584	304.333	29.825	49.32	49.02	.62
1906	1.584	309.311	30.680	49.10	49.38	-.56
1907	1.583	314.289	31.515	49.85	49.77	.15
1908	1.583	319.287	32.361	50.21	50.20	.01
1909	1.582	324.315	33.192	50.18	50.65	-.95
1910	1.582	329.376	33.990	51.11	51.10	.01
1501	3.276	298.669	41.454	60.31	57.04	5.42
1502	3.276	302.904	43.329	56.64	55.64	1.77
1503	3.275	307.501	45.321	55.60	54.89	1.27
1504	3.274	312.122	47.293	55.11	54.52	1.07
1505	3.272	316.773	49.247	54.33	54.37	-.06
1506	3.271	321.425	51.186	53.93	54.36	-.80
1507	3.270	326.113	53.122	53.91	54.45	-1.01
1301	4.611	308.116	49.890	62.03	60.31	2.76
1302	4.609	312.344	52.678	59.59	58.52	1.80
1303	4.607	316.397	55.316	58.61	57.63	1.67
1304	4.604	320.349	57.858	57.30	57.12	.30
1305	4.603	324.259	60.361	56.95	56.84	.20
1306	4.601	328.210	62.868	56.92	56.70	.40
1201	5.887	308.511	51.563	68.85	64.70	6.03
1202	5.884	313.190	55.723	62.98	60.78	3.48
1203	5.881	317.960	59.927	60.78	59.17	2.65
1204	5.878	322.792	64.160	59.47	58.33	1.92
1205	5.876	327.675	68.421	58.71	57.88	1.40
1705	7.891	307.853	52.034	67.13	57.84	13.85
1706	7.888	311.011	56.172	63.75	56.27	11.74
1707	7.884	314.211	60.385	62.20	55.72	10.42
1708	7.882	317.440	64.653	61.26	55.50	9.39
1709	7.880	320.690	68.959	60.54	55.45	8.40
1710	7.879	321.099	69.499	60.20	55.46	7.88
1711	7.877	324.541	74.068	59.88	55.52	7.29
1712	7.875	328.165	78.887	59.49	55.65	6.45
1407	9.177	306.561	52.088	59.72	54.91	8.06
1408	9.173	309.793	57.053	58.44	54.47	6.79
1409	9.169	313.122	63.321	57.70	54.37	5.78
1410	9.166	316.473	69.068	57.34	54.41	5.12
1413	9.158	326.629	86.571	56.92	54.91	3.54
1418	9.177	306.311	51.768	59.88	54.96	8.21
1419	9.173	309.399	56.983	58.49	54.50	6.82
1420	9.169	312.513	62.278	57.77	54.37	5.88
1421	9.166	315.643	67.631	57.36	54.39	5.17
1422	9.164	318.812	73.078	57.04	54.48	4.47
1423	9.161	321.990	78.549	56.95	54.63	4.07
1424	9.159	325.186	84.074	56.77	54.81	3.44
1425	9.156	328.408	89.645	56.85	55.02	3.20
1603	11.049	297.554	46.142	53.79	51.55	4.15

Table 14. Continued.

RODER ETHANE SPECIFIC HEATS CV(D,T), J/MOL/K

ID	MOL/L	T,K	P,BAR	CV,XPT	CALCD	PCNT
1604	11.044	300.530	53.651	53.36	51.72	3.08
1605	11.039	303.509	61.187	53.51	51.92	2.97
1606	11.035	306.501	68.788	53.59	52.15	2.69
1607	11.031	309.501	76.423	53.58	52.39	2.22
1608	11.028	312.511	84.114	53.55	52.65	1.68
1609	11.025	315.531	91.842	53.68	52.91	1.43
1610	11.021	318.570	99.602	53.85	53.19	1.23
1611	11.018	321.607	107.386	54.04	53.46	1.06
1612	11.015	324.656	115.207	54.14	53.75	.72
1613	11.012	328.087	124.024	54.44	54.07	.68
1105	11.976	290.820	43.784	51.74	50.22	2.94
1106	11.968	295.076	56.985	51.64	50.59	2.04
1107	11.975	291.384	45.535	51.62	50.27	2.63
1108	11.967	295.658	58.792	51.73	50.64	2.11
1109	11.959	299.925	72.026	51.98	51.03	1.83
1110	11.954	304.195	85.359	52.14	51.44	1.36
1111	11.948	308.490	98.737	52.37	51.85	1.00
1112	11.943	312.666	111.771	52.65	52.26	.74
1113	11.938	316.715	124.397	52.99	52.66	.61
1114	11.933	320.765	137.019	53.33	53.07	.49
1115	11.928	324.828	149.671	53.62	53.48	.27
1116	11.923	328.907	162.363	54.03	53.89	.26
1006	12.950	280.688	38.970	49.95	48.90	2.10
1007	12.941	284.835	54.895	49.93	49.29	1.27
1008	12.932	288.976	70.752	50.22	49.69	1.06
1009	12.925	293.117	86.663	50.47	50.10	.74
1010	12.925	293.453	87.981	50.60	50.13	.93
1011	12.918	297.602	103.887	50.83	50.55	.56
1012	12.912	301.740	119.770	51.20	50.96	.45
1014	12.900	310.014	151.432	51.71	51.82	-.20
1015	12.894	314.163	167.259	52.22	52.25	-.05
1016	12.888	318.308	183.035	52.68	52.68	.00
1017	12.882	322.453	198.776	53.17	53.11	.11
1018	12.876	326.617	214.554	53.56	53.55	.03
908	13.994	270.918	53.060	48.29	47.97	.66
909	13.983	274.958	72.359	48.61	48.33	.56
910	13.976	278.996	91.860	48.89	48.71	.38
911	13.968	283.030	111.187	49.18	49.09	.17
912	13.961	287.053	130.467	49.57	49.49	.17
913	13.954	291.068	149.638	50.00	49.89	.22
914	13.947	295.074	168.696	50.34	50.29	.09
915	13.940	299.072	187.645	50.72	50.70	.04
916	13.933	303.063	206.517	51.12	51.11	.02
917	13.926	307.053	225.268	51.58	51.53	.10
919	13.918	311.509	246.136	52.00	52.00	-.00
920	13.911	315.497	264.759	52.44	52.42	.05
921	13.904	319.489	283.335	52.84	52.84	.01
922	13.897	323.481	301.846	53.30	53.26	.07
923	13.890	327.478	320.314	53.80	53.68	.22
116	14.644	258.973	41.704	47.20	47.10	.20
117	14.628	265.038	75.079	47.57	47.58	-.03

Table 14. Continued.

RODER ETHANE SPECIFIC HEATS CV(D,T), J/MOL/K

ID	MOL/L	T,K	P,BAR	CV,XPT	CALCD	PCNT
118	14.616	271.085	108.467	48.17	48.10	.14
119	14.604	277.105	141.461	48.61	48.64	-.07
120	14.592	283.089	174.518	49.12	49.21	-.18
121	14.580	289.038	206.152	49.76	49.79	-.05
122	14.578	290.026	211.466	49.84	49.89	-.08
123	14.567	295.968	243.438	50.48	50.48	-.01
124	14.555	301.879	274.897	51.12	51.09	.06
125	14.543	307.773	306.052	51.82	51.71	.22
126	14.532	313.655	337.086	52.46	52.32	.25
146	14.647	257.577	33.917	47.20	47.00	.42
147	14.637	260.618	50.539	47.30	47.23	.16
148	14.631	263.680	67.577	47.38	47.47	-.19
149	14.624	266.736	84.416	47.74	47.73	.02
150	14.618	269.783	101.239	47.92	47.99	-.13
151	14.612	272.823	117.960	48.20	48.25	-.10
152	14.606	275.855	134.575	48.48	48.53	-.09
808	15.039	258.449	79.371	47.15	47.19	-.08
809	15.030	262.425	103.244	47.46	47.49	-.07
811	15.035	260.021	88.774	47.20	47.31	-.23
812	15.027	264.005	112.764	47.52	47.62	-.21
813	15.018	267.971	136.369	47.97	47.94	.06
814	15.009	271.915	159.747	48.29	48.28	.02
815	15.001	275.845	183.026	48.66	48.63	.04
816	14.993	279.768	206.147	49.05	49.00	.11
817	14.984	283.679	228.936	49.41	49.37	.08
818	14.976	287.579	251.687	49.75	49.74	.00
819	14.968	291.462	274.225	50.27	50.13	.29
820	14.959	295.349	296.522	50.62	50.52	.21
821	14.949	300.025	323.330	51.18	51.00	.36
308	16.140	231.182	35.886	45.31	44.92	.86
309	16.129	234.160	50.642	45.16	45.13	.07
310	16.121	237.158	80.711	45.53	45.35	.39
311	16.113	240.148	103.186	45.79	45.57	.48
312	16.105	243.126	125.439	46.06	45.79	.58
313	16.101	244.528	135.831	46.08	45.90	.40
314	16.086	250.439	179.288	46.68	46.34	.72
315	16.071	256.303	222.727	47.34	46.80	1.13
316	16.056	262.126	265.619	47.92	47.69	.06
317	16.041	267.928	306.735	48.53	48.34	.40
318	16.029	272.246	337.340	48.91	48.70	.43
708	16.914	214.213	29.552	44.89	44.25	1.43
709	16.898	218.031	63.154	44.88	44.50	.85
710	16.864	221.935	96.708	44.97	44.76	.48
711	16.872	225.787	130.375	45.16	45.02	.32
712	16.864	228.421	153.276	45.31	45.19	.25
713	16.852	232.253	186.272	45.70	45.45	.55
714	16.841	236.060	219.003	45.98	45.71	.58
715	16.830	239.848	251.303	46.36	45.98	.84
716	16.818	243.612	282.880	46.75	46.24	1.10
717	16.807	247.355	314.275	47.07	46.51	1.20
603	17.990	189.118	26.913	44.55	43.60	2.13

Table 14. Continued.

RODER ETHANE SPECIFIC HEATS CV(D,T), J/MOL/K

ID	MOL/L	T,K	P,BAR	CV,XPT	CALCD	PCNT
609	17.974	192.360	61.619	44.21	43.78	.98
610	17.959	195.613	96.776	44.09	43.96	.29
611	17.950	198.035	123.238	44.27	44.10	.39
612	17.938	201.281	158.435	44.50	44.29	.47
613	17.927	204.510	193.434	44.71	44.48	.51
614	17.915	207.717	227.542	44.94	44.66	.61
615	17.903	210.907	261.151	45.21	44.85	.79
616	17.892	214.081	294.623	45.46	45.04	.93
617	17.881	217.237	327.615	45.74	45.22	1.14
507	18.968	168.242	58.667	44.19	43.50	1.55
520	18.919	166.260	32.769	44.15	43.41	1.67
521	18.901	169.533	75.487	44.21	43.56	1.47
522	18.885	172.795	118.282	44.17	43.70	1.05
523	18.871	176.058	161.393	44.27	43.86	.93
524	18.857	179.304	203.766	44.43	44.01	.96
525	18.843	182.531	245.390	44.63	44.16	1.04
526	18.830	185.736	286.677	44.83	44.31	1.14
527	18.816	188.925	326.868	45.12	44.47	1.45
409	19.657	145.929	15.978	44.78	43.57	2.71
414	19.643	148.039	47.809	44.89	43.63	2.79
410	19.643	148.064	48.265	44.98	43.63	2.98
411	19.624	151.130	94.575	44.41	43.73	1.53
415	19.624	151.151	94.954	44.39	43.73	1.49
416	19.609	154.270	143.546	44.48	43.83	1.47
417	19.594	157.366	191.105	44.66	43.94	1.62
418	19.579	160.437	237.626	44.84	44.04	1.77
419	19.565	163.485	283.700	44.93	44.15	1.74
420	19.553	165.894	319.239	45.10	44.24	1.91
423	19.643	148.027	47.589	44.78	43.63	2.56
424	19.624	151.152	94.972	44.52	43.73	1.77
425	19.609	154.267	143.492	44.55	43.83	1.62
426	19.594	157.364	191.069	44.65	43.94	1.61
1810	20.289	131.088	61.092	45.99	44.15	3.99
1811	20.270	133.939	110.667	45.15	44.20	2.10
1812	20.254	136.801	161.522	45.23	44.25	2.17
1813	20.239	139.647	211.948	45.25	44.31	2.08
1814	20.224	142.469	261.213	45.40	44.37	2.27
1815	20.209	145.270	309.415	45.46	44.43	2.28
208	20.996	110.494	36.296	44.79	45.11	-.71
209	20.981	112.401	74.651	46.07	45.11	2.09
210	20.969	114.288	114.187	46.20	45.11	2.37
211	20.957	116.167	153.089	46.21	45.11	2.37
212	20.944	118.324	197.798	46.28	45.12	2.51
213	20.930	120.762	248.208	46.41	45.13	2.76
214	20.915	123.178	296.686	46.43	45.14	2.78

Table 15. Comparison with specific heats, $C_p(\rho,T)$, from (33) Bier, Kunze and Maurer.

BIER ETHANE SPECIFIC HEATS CP(P,T), J/MOL/K

ID	P,BAR	T,K	MOL/L	CP	CALCD	PCNT
33	0.000	283.150	0.000	50.49	50.69	-.39
33	0.000	298.150	0.000	52.47	52.47	.00
33	0.000	305.350	0.000	53.28	53.35	-.12
33	0.000	323.150	0.000	55.48	55.56	-.15
33	0.000	348.150	0.000	58.16	58.75	-1.02
33	0.000	373.150	0.000	61.16	61.99	-1.36
33	0.000	398.150	0.000	64.59	65.24	-1.01
33	0.000	423.150	0.000	67.78	68.47	-1.02
33	0.000	473.150	0.000	74.09	74.75	-.89
33	1.000	283.150	.043	50.88	51.10	-.43
33	1.000	298.150	.041	52.77	52.83	-.10
33	1.000	305.350	.040	53.55	53.68	-.23
33	1.000	323.150	.037	55.75	55.85	-.17
33	1.000	348.150	.035	58.37	58.98	-1.06
33	1.000	373.150	.032	61.37	62.19	-1.32
33	1.000	398.150	.030	64.71	65.41	-1.08
33	1.000	423.150	.029	67.90	68.61	-1.05
33	1.000	473.150	.025	74.18	74.86	-.91
33	2.000	283.150	.087	51.30	51.52	-.43
33	2.000	298.150	.082	53.13	53.19	-.10
33	2.000	305.350	.080	53.95	54.02	-.13
33	2.000	323.150	.075	55.99	56.13	-.25
33	2.000	348.150	.070	58.58	59.21	-1.09
33	2.000	373.150	.065	61.58	62.37	-1.28
33	2.000	398.150	.061	64.86	65.56	-1.08
33	2.000	423.150	.057	68.02	68.74	-1.07
33	2.000	473.150	.051	74.27	74.96	-.93
33	5.000	283.150	.223	52.80	52.96	-.30
33	5.000	298.150	.210	54.43	54.39	.08
33	5.000	305.350	.204	55.09	55.12	-.06
33	5.000	323.150	.192	56.95	57.04	-.16
33	5.000	348.150	.177	59.33	59.93	-1.02
33	5.000	373.150	.164	62.21	62.96	-1.20
33	5.000	398.150	.153	65.31	66.05	-1.13
33	5.000	423.150	.144	68.41	69.15	-1.08
33	5.000	473.150	.128	74.63	75.26	-.84
33	10.000	283.150	.469	56.02	56.07	-.08
33	10.000	298.150	.438	56.95	56.84	.20
33	10.000	305.350	.425	57.25	57.34	-.15
33	10.000	323.150	.396	58.79	58.81	-.04
33	10.000	348.150	.363	60.68	61.26	-.98
33	10.000	373.150	.335	63.36	64.02	-1.04
33	10.000	398.150	.311	66.09	66.91	-1.23

Table 15. Continued.

BIER ETHANE SPECIFIC HEATS CP(P,T), J/MOL/K

ID	P,BAR	T,K	MOL/L	CP	CALCD	PCNT
33	10.000	423.150	.291	69.22	69.86	-.92
33	10.000	473.150	.258	75.18	75.77	-.79
33	20.000	283.150	1.075	67.45	67.37	.11
33	20.000	298.150	.973	64.68	64.49	.30
33	20.000	305.350	.933	63.99	63.89	.15
33	20.000	323.150	.852	63.54	63.57	-.04
33	20.000	348.150	.765	63.99	64.60	-.95
33	20.000	373.150	.697	65.91	66.49	-.88
33	20.000	398.150	.642	68.05	68.84	-1.16
33	20.000	423.150	.597	70.78	71.42	-.89
33	20.000	473.150	.524	76.26	76.85	-.78
33	30.000	298.150	1.689	81.64	81.28	.44
33	30.000	305.350	1.584	76.86	76.46	.52
33	30.000	323.150	1.395	70.84	70.99	-.20
33	30.000	348.150	1.218	68.50	69.04	-.80
33	30.000	373.150	1.092	68.92	69.54	-.90
33	30.000	398.150	.996	70.27	71.09	-1.16
33	30.000	423.150	.918	72.53	73.16	-.87
33	30.000	473.150	.799	77.31	78.00	-.89
33	32.000	323.150	1.519	72.98	72.99	-.02
33	35.000	473.150	.939	77.94	78.60	-.85
33	36.000	373.150	1.347	70.78	71.70	-1.30
33	39.000	298.150	2.770	153.57	144.14	6.14
33	40.000	305.350	2.555	114.69	112.39	2.00
33	40.000	323.150	2.088	84.62	84.08	.64
33	40.000	348.150	1.738	74.78	75.21	-.57
33	40.000	373.150	1.526	72.41	73.31	-1.25
33	40.000	398.150	1.373	72.83	73.70	-1.19
33	40.000	423.150	1.255	74.45	75.10	-.87
33	40.000	473.150	1.081	78.54	79.23	-.87
33	46.000	305.350	3.680	276.43	229.59	16.94
33	48.800	307.150	4.362	401.61	372.36	7.28
33	48.800	313.150	3.463	157.99	156.36	1.03
33	48.800	316.150	3.244	134.41	133.40	.75
33	48.800	323.150	2.897	108.07	107.80	.25
33	48.800	348.150	2.271	82.06	82.86	-.97
33	48.800	373.150	1.946	76.59	77.40	-1.06
33	48.800	398.150	1.728	75.36	76.34	-1.31
33	48.800	423.150	1.567	76.11	76.99	-1.16
33	48.800	473.150	1.336	79.57	80.36	-1.00
33	52.000	305.350	9.588	273.85	290.58	-6.11
33	60.000	305.350	10.647	162.62	169.00	-3.92
33	60.000	309.150	9.806	204.30	223.12	-9.22
33	60.000	313.150	8.302	341.87	392.90	-14.93

Table 15. Continued.

BIER ETHANE SPECIFIC HEATS CP(P,T), J/MOL/K

ID	P,BAR	T,K	MOL/L	CP	CALCD	PCNT
33	60.000	314.650	7.471	427.54	443.35	-3.70
33	60.000	316.150	6.679	458.33	416.84	9.05
33	60.000	317.150	6.227	429.55	384.07	10.59
33	60.000	318.150	5.823	326.35	305.45	6.40
33	60.000	323.150	4.083	206.76	203.58	1.54
33	60.000	348.150	3.094	96.40	97.48	-1.11
33	60.000	373.150	2.541	82.99	83.92	-1.12
33	60.000	398.150	2.215	79.29	80.22	-1.17
33	60.000	423.150	1.983	78.72	79.64	-1.16
33	60.000	473.150	1.670	81.07	81.87	-.99
33	63.000	323.150	5.456	258.96	250.03	3.45
33	66.000	323.150	6.319	296.58	273.15	7.90
33	68.000	323.150	6.871	288.07	268.96	6.63
33	70.000	305.350	11.253	133.00	136.14	-2.36
33	70.000	313.150	10.028	168.60	178.14	-5.66
33	70.000	316.150	9.381	198.01	209.31	-5.71
33	70.000	320.150	8.284	243.24	258.78	-6.39
33	70.000	323.150	7.378	272.70	262.38	3.78
33	70.000	325.150	6.831	266.66	247.63	7.14
33	70.000	329.150	5.939	225.40	215.12	4.56
33	70.000	339.150	4.633	141.18	144.71	-2.50
33	70.000	348.150	4.017	115.38	117.00	-1.40
33	70.000	373.150	3.141	90.15	91.17	-1.13
33	70.000	398.150	2.680	82.96	84.20	-1.49
33	70.000	423.150	2.375	81.13	82.23	-1.35
33	70.000	473.150	1.976	82.36	83.29	-1.12
33	80.000	305.350	11.664	120.61	121.80	-.98
33	80.000	323.150	9.097	180.39	187.15	-3.75
33	80.000	329.150	7.844	198.88	203.42	-2.28
33	80.000	339.150	6.115	176.96	170.60	3.59
33	80.000	348.150	5.137	138.89	138.75	.10
33	80.000	373.150	3.810	98.18	99.57	-1.42
33	80.000	398.150	3.179	87.17	88.59	-1.63
33	80.000	423.150	2.784	83.56	85.00	-1.72
33	80.000	473.150	2.289	83.74	84.75	-1.20
33	92.000	348.150	6.541	152.33	148.65	2.42
33	100.000	305.350	12.246	106.12	107.77	-1.55
33	100.000	323.150	10.545	126.35	130.02	-2.90
33	100.000	348.150	7.363	149.48	147.28	1.47
33	100.000	373.150	5.300	114.27	114.71	-.39
33	100.000	398.150	4.262	96.43	97.67	-1.28
33	100.000	423.150	3.651	89.07	90.78	-1.92
33	100.000	473.150	2.932	86.69	87.74	-1.20

Table 16. Comparison with specific heats, $C_p(\rho,T)$, from A. Furtado.

FURTADO ETHANE CP(P,T) AT P = 0.000 BAR

T,K	MOL/L	J/MOL/K	CALCD	PCNT
99.817	0.000	35.86	35.72	.37
110.928	0.000	36.49	36.34	.41
118.372	0.000	36.98	36.76	.59
122.039	0.000	37.24	36.97	.73
133.150	0.000	37.99	37.61	1.00
144.261	0.000	38.74	38.28	1.19
155.372	0.000	39.25	38.98	.69
166.483	0.000	40.02	39.72	.74
177.594	0.000	40.77	40.51	.64
186.872	0.000	41.39	41.21	.43
188.706	0.000	41.65	41.35	.72
199.817	0.000	42.53	42.24	.67
210.928	0.000	43.52	43.20	.74
222.039	0.000	44.53	44.21	.73
233.150	0.000	45.55	45.27	.60
241.761	0.000	46.43	46.14	.62
244.261	0.000	46.67	46.39	.59
255.372	0.000	47.93	47.56	.76
266.483	0.000	49.20	48.78	.85
277.594	0.000	50.46	50.04	.82
282.706	0.000	50.96	50.63	.65
288.706	0.000	51.71	51.34	.72
299.817	0.000	52.84	52.67	.31
305.261	0.000	53.21	53.34	-.23
310.928	0.000	53.85	54.03	-.34
322.039	0.000	55.24	55.42	-.33
324.817	0.000	55.61	55.77	-.29
333.150	0.000	56.62	56.83	-.36
344.261	0.000	58.12	58.25	-.22
355.372	0.000	60.15	59.68	.77
366.483	0.000	61.65	61.12	.85
366.817	0.000	61.78	61.17	.99
377.594	0.000	63.17	62.57	.94
388.706	0.000	64.53	64.02	.80
399.817	0.000	65.81	65.46	.53
410.928	0.000	66.56	66.90	-.51
422.039	0.000	67.81	68.33	-.76

FURTADO ETHANE CP(P,T) AT P = 17.237 BAR

T,K	MOL/L	J/MOL/K	CALCD	PCNT
99.817	21.357	68.45	68.33	.17
110.926	20.953	68.69	68.63	.10
118.372	20.682	68.83	68.80	.03
122.039	20.547	68.94	68.90	.06
133.150	20.137	69.20	69.24	-.05
144.261	19.722	69.82	69.70	.16
155.372	19.301	70.70	70.33	.52
166.483	18.871	71.47	71.14	.46
177.594	18.430	72.46	72.16	.41
186.872	18.051	73.34	73.20	.20
188.706	17.974	73.47	73.43	.07
199.817	17.502	74.99	74.98	.02

Table 16. Continued.

210.928	17.006	76.75	76.89	-.18
222.039	16.481	78.89	79.29	-.51
233.150	15.917	82.02	82.37	-.42
241.761	15.444	85.30	85.45	-.17
244.261	15.299	85.94	86.50	-.66
249.817	14.962	89.33	89.19	.16
252.594	14.785	91.34	90.76	.64
255.372	14.601	94.11	92.51	1.70
258.150	14.409	98.76	95.15	3.65
260.928	1.053	74.35	71.58	3.74
262.594	1.037	72.72	70.29	3.35
265.372	1.011	70.21	68.54	2.38
266.483	1.002	69.44	67.95	2.15
277.594	.921	65.17	64.18	1.52
282.706	.890	64.05	63.23	1.27
288.706	.857	63.28	62.49	1.25
299.817	.805	62.40	61.81	.94
305.261	.783	62.15	61.71	.72
310.928	.761	62.02	61.72	.49
322.039	.723	62.28	62.01	.44
324.817	.714	62.40	62.12	.44
333.150	.689	62.77	62.56	.34
344.261	.659	63.65	63.29	.57
355.372	.632	64.53	64.16	.57
366.483	.608	65.30	65.14	.25
366.817	.607	65.41	65.17	.38
377.594	.585	66.18	66.19	-.01

FURTADO ETHANE CP(P,T) AT P = 28.269 BAR

T,K	MOL/L	J/MOL/K	CALCD	PCNT
277.594	12.988	115.37	114.59	.67
278.706	12.873	116.13	117.07	-.81
279.817	12.754	118.65	119.88	-1.04

FURTADO ETHANE CP(P,T) AT P = 34.474 BAR

T,K	MOL/L	J/MOL/K	CALCD	PCNT
233.150	16.032	81.78	81.22	.69
241.761	15.581	84.42	83.86	.66
244.261	15.444	85.30	84.74	.65
255.372	14.792	89.20	89.57	-.41
266.483	14.046	96.88	97.35	-.48
277.594	13.137	109.70	110.07	-.33
282.706	12.620	119.26	120.71	-1.21
285.928	12.238	128.82	131.31	-1.93
287.594	12.013	136.88	139.10	-1.62
288.706	11.850	142.81	145.77	-2.08
290.372	2.428	131.60	133.24	-1.25
291.483	2.373	122.28	124.61	-1.90
292.594	2.323	115.63	117.93	-1.99
294.261	2.257	107.19	110.26	-2.86
297.039	2.164	98.52	101.27	-2.79
299.817	2.085	98.38	95.04	3.40
305.261	1.959	87.06	87.05	.02
310.928	1.853	82.28	81.90	.46
322.039	1.693	76.25	76.20	.06
324.817	1.659	75.61	75.30	.41

Table 16. Continued.

333.150	1.570	73.72	73.32	.54
344.261	1.472	72.22	71.85	.51
355.372	1.389	71.47	71.19	.40
366.483	1.319	71.47	71.04	.60
366.817	1.317	71.47	71.04	.60

FURTADO ETHANE CP(P,T) AT P = 41.369 BAR

T,K	MOL/L	J/MOL/K	CALCD	PCNT
282.706	12.813	111.60	114.18	-2.32
288.706	12.150	129.59	129.92	-.25
294.261	11.326	161.66	163.70	-1.26
295.928	10.994	179.28	186.22	-3.87
297.039	10.727	195.31	211.22	-8.32
298.706	3.247	220.80	212.03	3.97
299.817	3.125	189.98	181.20	4.63
299.817	3.125	189.85	181.20	4.56
300.650	3.049	168.60	165.94	1.58
301.206	3.003	157.76	157.93	-.10
302.594	2.903	137.89	142.72	-3.50
305.261	2.749	122.41	124.23	-1.48
310.926	2.512	104.68	104.03	.63
322.039	2.213	89.20	87.64	1.75
324.817	2.156	86.93	85.38	1.78

FURTADO ETHANE CP(P,T) AT P = 46.678 BAR

T,K	MOL/L	J/MOL/K	CALCD	PCNT
298.428	10.917	174.88	179.57	-2.68
299.817	10.602	198.79	204.66	-2.95
300.650	10.379	221.43	228.19	-3.05
301.206	10.209	240.31	250.70	-4.32
302.039	9.902	279.31	305.73	-9.46
302.594	9.640	320.83	376.35	-17.31
302.872	9.477	352.28	438.30	-24.42
303.150	9.275	401.35	546.26	-36.11
303.983	4.277	425.25	464.43	-9.21
304.261	4.178	352.28	399.59	-13.43
305.261	3.922	299.44	284.31	5.05
305.372	3.900	293.15	276.69	5.61
305.928	3.798	261.69	245.94	6.02
306.761	3.670	223.95	214.56	4.19
308.150	3.502	184.94	181.93	1.63
309.539	3.367	162.30	161.39	.56
310.928	3.255	148.47	147.11	.91
310.928	3.255	148.84	147.11	1.16
313.706	3.074	130.85	128.37	1.90
316.483	2.930	120.28	116.49	3.15
322.039	2.709	119.02	102.19	14.14
324.817	2.620	97.88	97.55	.34

FURTADO ETHANE CP(P,T) AT P = 49.160 BAR

T,K	MOL/L	J/MOL/K	CALCD	PCNT
282.706	13.002	106.07	108.90	-2.67
283.150	12.962	106.69	109.54	-2.67
288.706	12.416	119.15	119.63	-.40
294.261	11.751	135.50	137.12	-1.20
297.039	11.342	149.08	152.45	-2.26

Table 16. Continued.

298.261	11.136	156.64	162.16	-3.53
299.817	10.839	177.89	179.34	-.81
300.928	10.595	193.13	197.29	-2.16
302.039	10.310	217.40	224.33	-3.19
302.594	10.146	231.24	243.96	-5.50
303.150	9.960	246.48	270.93	-9.92
303.706	9.744	274.40	310.68	-13.22
304.261	9.481	566.16	376.28	33.54
304.817	9.133	691.97	511.01	26.15
305.261	8.710	1006.56	817.38	18.79
305.261	8.710	1132.32	817.38	27.81
306.483	4.905	553.58	713.00	-28.80
307.039	4.604	488.15	475.27	2.64
307.594	4.402	375.56	372.44	.83
308.150	4.248	332.39	313.42	5.71
309.261	4.016	261.83	247.07	5.64
310.928	3.768	200.05	196.72	1.66
313.706	3.483	158.14	156.03	1.34
316.483	3.277	135.50	134.66	.61
322.039	2.984	108.82	112.18	-3.08
324.817	2.872	101.91	105.49	-3.52
327.594	2.774	102.54	100.40	2.09
333.150	2.611	95.37	93.19	2.28

FURTADO ETHANE CP(P,T) AT P = 51.711 BAR

T,K	MOL/L	J/MOL/K	CALCD	PCNT
322.039	3.308	125.81	125.97	-.13
324.817	3.162	116.88	115.98	.77
333.150	2.838	99.26	98.88	.38
344.261	2.548	88.82	88.29	.61
355.372	2.338	83.03	82.96	.09
366.483	2.176	79.27	80.03	-.97
366.817	2.171	79.13	79.97	-1.06
377.594	2.043	76.75	78.41	-2.16

FURTADO ETHANE CP(P,T) AT P = 56.463 BAR

T,K	MOL/L	J/MOL/K	CALCD	PCNT
310.372	8.505	408.89	456.84	-11.73
310.650	8.323	444.12	496.21	-11.73
310.928	8.124	483.13	536.74	-11.10
311.206	7.911	530.92	574.01	-8.12
311.483	7.669	577.48	602.16	-4.27
311.761	7.460	626.55	616.85	1.55
312.039	7.232	666.81	617.46	7.40
312.150	7.143	680.65	614.49	9.72
312.261	7.055	689.46	610.18	11.50
312.428	6.925	693.22	601.93	13.17
312.594	6.800	694.48	449.55	35.27
312.706	6.718	693.22	591.17	14.72
312.817	6.638	691.97	584.44	15.54
312.928	6.560	679.39	577.29	15.03
313.150	6.408	644.15	561.41	12.85
313.428	6.230	595.10	538.36	9.54
313.706	6.063	552.31	512.46	7.22
313.963	5.910	514.58	485.13	5.72
314.261	5.768	485.64	457.55	5.78

FURTADO ETHANE CP(P,T) AT P = 68.948 BAR

T,K	MOL/L	J/MOL/K	CALCD	PCNT

Table 16. Continued.

110.928	21.026	68.56	68.45	.17
118.372	20.759	68.69	68.59	.15
122.039	20.628	68.63	68.67	.23
133.150	20.228	69.07	68.95	.17
144.261	19.824	69.71	69.35	.51
155.372	19.415	70.46	69.89	.81
166.483	19.000	71.21	70.58	.88
177.594	18.577	71.84	71.45	.55
186.872	18.215	72.46	72.32	.19
188.706	18.143	73.23	72.51	.98
199.817	17.696	73.98	73.79	.26
210.928	17.233	75.37	75.32	.07
222.039	16.750	77.00	77.15	-.19
233.150	16.241	79.27	79.35	-.11
241.761	15.825	81.14	81.40	-.32
244.261	15.700	82.41	82.06	.43
255.372	15.117	85.68	85.48	.23
266.483	14.477	89.46	90.53	-1.19
277.594	13.757	95.74	96.66	-.96
282.706	13.389	98.89	100.41	-1.54
288.706	12.916	104.93	106.00	-1.03
299.817	11.866	111.84	122.85	-9.84
305.261	11.213	137.15	137.98	-.61
310.928	10.349	156.53	166.68	-5.14
314.261	9.687	176.39	197.14	-11.76
316.483	9.146	200.16	226.51	-13.16
317.594	8.839	222.69	243.22	-9.22
319.261	8.334	254.27	265.85	-4.55
320.372	7.980	270.62	274.74	-1.52
320.928	7.801	277.80	276.38	.51
322.039	7.451	284.97	274.15	3.80
322.706	7.248	285.59	270.06	5.44
323.706	6.959	285.22	261.81	8.21
324.817	6.660	281.83	254.37	9.74
324.817	6.660	282.20	254.37	9.86
325.372	6.520	277.16	249.22	10.08
326.483	6.256	268.30	238.45	7.68
327.594	6.014	240.93	227.11	5.74
330.372	5.503	200.55	198.94	.80
333.150	5.102	176.51	175.06	.82
335.928	4.784	158.91	156.59	1.45
338.706	4.525	143.69	142.59	.76
344.261	4.127	123.29	123.55	-.20
355.372	3.594	104.42	103.61	.78
366.483	3.240	94.49	93.91	.61
366.817	3.231	94.24	93.70	.57

FURTADO ETHANE CP(P,T) AT P = 86.184 BAR

T,K	MOL/L	J/MOL/K	CALCD	PCNT
282.706	13.660	94.86	95.85	-1.04
288.706	13.244	98.89	99.67	-.79
299.817	12.371	108.21	109.34	-1.05
305.261	11.878	114.62	116.05	-1.25
310.928	11.298	123.42	125.38	-1.58
316.483	10.641	134.61	138.03	-2.54
322.039	9.866	149.97	155.37	-3.61

Table 16. Continued.

324.817	9.426	160.16	165.39	-3.26
327.594	8.952	168.20	174.72	-3.88
330.372	8.456	176.13	182.94	-3.87
333.150	7.959	186.54	183.61	-1.70
334.817	7.670	181.17	181.46	-.16
337.039	7.306	180.29	176.53	2.08
338.706	7.050	177.65	172.04	3.16
341.483	6.658	170.23	164.36	3.45
344.261	6.306	161.79	156.94	3.00
349.817	5.711	148.47	142.53	4.00
355.372	5.240	134.00	129.88	3.07
366.483	4.556	114.24	111.94	2.01
366.817	4.540	113.96	111.53	2.14
377.594	4.086	101.66	101.33	.32

FURTADO ETHANE CP(P,T) AT P = 103.421 BAR

T,K	MOL/L	J/MOL/K	CALCD	PCNT
241.761	16.040	79.64	79.57	.09
244.261	15.924	80.15	80.10	.06
255.372	15.390	82.79	82.73	.08
266.483	14.818	85.94	86.51	-.67
277.594	14.197	89.84	90.45	-.68
282.706	13.892	91.84	92.60	-.82
288.706	13.515	94.73	95.47	-.78
299.817	12.749	101.66	102.08	-.41
305.261	12.333	105.68	106.15	-.45
310.928	11.866	110.34	111.20	-.78
316.483	11.367	115.63	117.15	-1.31
322.039	10.818	122.17	124.28	-1.73
324.817	10.523	126.44	128.29	-1.46
327.594	10.214	129.97	132.53	-1.97
333.150	9.552	137.89	142.77	-3.53
338.706	8.848	144.81	148.47	-2.53
344.261	8.145	150.85	148.77	1.38
344.928	8.063	151.73	148.40	2.19
345.928	7.942	151.48	147.70	2.50
348.150	7.680	151.11	145.62	3.63
349.817	7.491	149.22	143.72	3.68
352.594	7.194	144.81	140.18	3.20
355.372	6.917	140.91	136.50	3.13
360.928	6.420	132.35	129.58	2.09
366.483	5.993	126.82	123.19	2.86
366.817	5.969	126.44	122.82	2.86
377.594	5.309	116.75	112.17	3.93

FURTADO ETHANE CP(P,T) AT P = 120.658 BAR

T,K	MOL/L	J/MOL/K	CALCD	PCNT
324.817	11.183	113.73	113.63	.09
333.150	10.434	120.26	122.53	-1.88
338.706	9.899	124.68	126.80	-1.70
344.261	9.344	129.70	130.20	-.38
347.039	9.063	131.60	131.25	.26
349.817	8.783	132.74	131.73	.76
351.761	8.590	133.12	131.69	1.07
352.317	8.535	133.23	131.62	1.21
355.372	8.239	132.35	130.82	1.15

Table 16. Continued.

358.150	7.979	130.34	129.54	.62
360.928	7.730	128.34	127.86	.37
366.483	7.267	124.04	123.84	.17
366.817	7.240	123.80	123.58	.17
377.594	6.482	117.26	115.87	1.18

FURTADO ETHANE CP(P,T) AT P = 137.895 BAR

T,K	MOL/L	J/MOL/K	CALCD	PCNT
110.928	21.119	68.19	68.23	-.07
118.372	20.859	68.45	68.35	.15
122.039	20.731	68.56	68.40	.23
133.150	20.343	68.94	68.62	.45
144.261	19.952	69.44	68.94	.72
155.372	19.559	70.06	69.38	.99
166.483	19.161	70.59	69.96	.89
177.594	18.758	71.09	70.68	.58
186.872	18.416	71.58	71.39	.27
188.706	18.347	71.71	71.54	.23
199.817	17.926	72.72	72.57	.21
210.928	17.499	73.98	73.77	.29
222.039	17.057	75.37	75.15	.29
233.150	16.600	77.13	76.74	.50
241.761	16.233	78.63	78.14	.62
244.261	16.124	79.00	78.58	.53
255.372	15.626	81.14	80.72	.52
266.483	15.102	83.41	83.80	-.47
277.594	14.547	86.31	86.69	-.43
282.706	14.279	87.70	88.19	-.56
288.706	13.953	89.71	90.09	-.43
299.817	13.314	92.97	94.09	-1.20
305.261	12.981	94.86	96.28	-1.50
310.928	12.623	97.88	98.76	-.90
322.039	11.862	103.80	104.19	-.38
324.817	11.662	105.43	105.67	-.22
333.150	11.033	110.45	112.09	-1.48
344.261	10.136	116.62	117.46	-.72
355.372	9.206	120.28	120.93	-.54
366.483	8.294	120.65	120.05	.50
366.817	8.269	118.38	119.95	-1.33
377.594	7.491	112.61	115.59	-2.65

Table 17. Comparison with speeds of sound, $W_\sigma(T)$, from (1) Poole and Aziz; (2) Vangeel; (9) Tsumura.

SPEED OF SOUND, SAT.LIQ. ETHANE, METERS/SEC.
(1)POOLE/AZIZ, (2)VAN GEEL, (3)TSUMURA.

ID	T,K	P,BAR	MOL/L	W,XPT	CALCD	PCNT
1	90.183	.000	21.686	1994.8	2039.8	-2.25
9	90.350	.000	21.680	2006.9	2038.6	-1.58
9	91.000	.000	21.656	2002.4	2033.9	-1.57
1	92.955	.000	21.585	1977.3	2019.6	-2.14
9	95.000	.000	21.511	1975.3	2004.3	-1.47
2	95.500	.000	21.492	1963.0	2000.6	-1.92
1	98.723	.000	21.375	1933.6	1976.1	-2.20
2	99.700	.000	21.339	1934.0	1968.6	-1.79
9	100.000	.000	21.328	1939.6	1966.3	-1.38
1	100.153	.000	21.323	1921.9	1965.1	-2.25
1	103.151	.000	21.213	1904.5	1941.9	-1.96
2	104.870	.000	21.151	1898.5	1928.5	-1.58
9	105.000	.000	21.146	1903.7	1927.4	-1.25
1	108.298	.001	21.025	1867.2	1901.5	-1.84
2	109.800	.001	20.970	1862.0	1889.6	-1.48
9	110.000	.001	20.963	1867.4	1888.0	-1.10
1	111.524	.001	20.907	1844.4	1875.9	-1.71
1	114.943	.002	20.781	1818.0	1848.7	-1.69
2	114.970	.002	20.780	1826.2	1848.5	-1.22
9	115.000	.002	20.779	1831.2	1848.2	-.93
2	115.010	.002	20.779	1827.0	1848.1	-1.16
2	119.700	.003	20.606	1795.0	1810.7	-.87
9	120.000	.004	20.595	1794.9	1808.3	-.74
1	121.008	.004	20.558	1774.6	1800.2	-1.44
9	125.000	.007	20.410	1759.0	1769.2	-.53
2	125.490	.007	20.392	1752.8	1764.3	-.66
1	127.247	.009	20.326	1730.4	1750.3	-1.15
9	130.000	.013	20.224	1722.8	1728.2	-.32
2	130.110	.013	20.220	1721.0	1727.4	-.37
1	132.325	.017	20.137	1693.8	1709.7	-.94
1	134.090	.021	20.071	1682.6	1695.6	-.77
2	134.890	.022	20.041	1685.0	1689.2	-.25
9	135.000	.023	20.037	1685.9	1688.3	-.15
2	139.470	.036	19.869	1652.1	1652.8	-.04
1	139.907	.038	19.852	1639.7	1649.3	-.59
9	140.000	.038	19.849	1649.4	1648.6	.05
9	145.000	.062	19.659	1612.7	1609.0	.23
2	145.080	.062	19.656	1608.0	1608.3	-.02
1	147.123	.075	19.579	1587.7	1592.2	-.28
1	147.821	.080	19.552	1583.4	1586.7	-.21

Table 17. Continued.

SPEED OF SOUND, SAT.LIQ. ETHANE, METERS/SEC.
(1)POOLE/AZIZ, (2)VAN GEEL, (3)TSUMURA.

ID	T,K	P,BAR	MOL/L	W,XPT	CALCD	PCNT
9	150.000	.097	19.469	1575.5	1569.5	.38
2	151.260	.108	19.419	1565.7	1559.5	.40
1	154.047	.135	19.313	1536.7	1537.8	-.07
9	155.000	.146	19.276	1538.3	1530.3	.52
2	155.940	.157	19.240	1531.2	1523.0	.54
1	159.772	.211	19.091	1494.7	1493.0	.11
9	160.000	.215	19.082	1501.1	1491.3	.66
2	161.250	.235	19.033	1491.2	1481.5	.65
2	161.260	.235	19.032	1491.4	1481.4	.67
2	164.860	.304	18.891	1464.0	1453.5	.72
2	164.890	.305	18.890	1463.1	1453.2	.67
9	165.000	.307	18.885	1463.6	1452.4	.77
1	165.519	.318	18.865	1453.2	1448.4	.33
1	168.945	.400	18.729	1430.5	1421.8	.61
2	169.840	.425	18.693	1426.5	1414.9	.81
9	170.000	.429	18.687	1426.0	1413.7	.86
1	174.260	.561	18.515	1391.7	1380.8	.78
2	174.590	.572	18.502	1391.0	1378.3	.92
9	175.000	.587	18.485	1388.1	1375.1	.94
1	177.140	.667	18.399	1368.6	1358.6	.73
2	179.850	.781	18.288	1350.9	1337.8	.97
9	180.000	.787	18.282	1350.3	1336.7	1.01
1	180.458	.808	18.263	1343.2	1333.1	.75
1	183.076	.935	18.155	1325.4	1313.1	.93
1	184.571	1.015	18.093	1312.9	1301.6	.86
2	184.670	1.020	18.089	1316.2	1300.8	1.17
9	185.000	1.038	18.075	1312.1	1298.3	1.05
1	188.832	1.269	17.914	1280.3	1269.0	.88
2	189.710	1.328	17.877	1276.1	1262.3	1.08
9	190.000	1.347	17.865	1273.6	1260.0	1.06
9	195.000	1.723	17.651	1235.0	1221.8	1.07
2	195.090	1.730	17.647	1234.3	1221.1	1.07
1	198.781	2.056	17.487	1202.2	1192.9	.77
2	199.640	2.139	17.449	1199.1	1186.3	1.07
9	200.000	2.174	17.433	1196.0	1183.6	1.04
2	204.420	2.643	17.237	1160.2	1149.7	.90
9	205.000	2.710	17.211	1156.9	1145.3	1.00
9	210.000	3.340	16.984	1117.4	1107.0	.93
2	210.310	3.382	16.969	1115.1	1104.6	.94
2	214.560	4.005	16.772	1081.5	1071.9	.89
9	215.000	4.074	16.751	1077.7	1068.5	.85

Table 17. Continued.

SPEED OF SOUND, SAT.LIQ. ETHANE, METERS/SEC.
(1)POOLE/AZIZ, (2)VAN GEEL, (3)TSUMURA.

ID	T,K	P,BAR	MOL/L	W,XPT	CALCD	PCNT
9	220.000	4.922	16.512	1037.7	1029.9	.75
2	220.100	4.940	16.508	1036.4	1029.1	.70
2	224.960	5.887	16.269	996.8	991.4	.54
9	225.000	5.895	16.267	997.3	991.1	.62
2	229.930	6.967	16.016	958.1	952.5	.58
9	230.000	7.004	16.014	956.5	952.0	.47
2	234.910	8.235	15.758	916.4	913.3	.34
9	235.000	8.259	15.753	915.3	912.6	.30
2	239.900	9.641	15.488	875.3	873.5	.20
9	240.000	9.670	15.483	873.6	872.7	.10
2	244.960	11.238	15.204	831.4	832.7	-.16
2	244.750	11.168	15.216	832.5	834.4	-.23
9	245.000	11.251	15.201	831.3	832.4	-.13
9	250.000	13.011	14.908	788.5	791.5	-.38
2	250.220	13.093	14.894	787.7	789.7	-.26
9	255.000	14.964	14.600	745.0	750.0	-.67
2	255.110	15.009	14.593	744.6	749.0	-.60
2	259.930	17.090	14.280	700.0	705.7	-.82
9	260.000	17.121	14.275	700.7	705.1	-.63
2	264.970	19.481	13.932	655.5	662.3	-1.04
9	265.000	19.496	13.930	655.4	662.1	-1.02
2	269.920	22.057	13.568	609.7	618.6	-1.45
9	270.000	22.101	13.562	609.0	617.8	-1.45
2	274.170	24.460	13.232	569.6	579.9	-1.81
9	275.000	24.951	13.164	561.1	572.2	-1.98
9	280.000	28.062	12.728	511.5	524.9	-2.61
2	280.050	28.095	12.723	509.4	524.4	-2.94
9	285.000	31.452	12.240	459.4	475.4	-3.48
2	285.150	31.559	12.225	459.0	473.9	-3.24
2	288.570	34.055	11.850	423.8	438.3	-3.43
9	290.000	35.142	11.680	404.2	423.0	-4.65
9	295.000	39.159	11.003	343.9	366.3	-6.50
9	295.397	39.493	10.942	339.0	361.5	-6.64
9	296.000	40.004	10.840	331.1	354.2	-6.97
9	297.000	40.865	10.679	317.8	341.8	-7.54
9	298.000	41.741	10.500	304.0	328.9	-8.21
9	299.000	42.632	10.306	289.6	315.7	-9.00

Table 18. Comparison with speeds of sound, W(ρ,T), from (3) Terres et al.

TERRES ETHANE SPEED OF SOUND, METERS/SEC.

ID	T,K	P,BAR	MOL/L	W,XPT	CALCD	PCNT
3	292.650	.981	.041	308.8	308.6	.06
3	292.650	4.903	.210	302.9	301.8	.35
3	292.650	9.807	.446	294.8	292.7	.71
3	292.650	14.710	.694	285.2	282.8	.85
3	292.650	19.613	.982	274.5	271.9	.95
3	292.650	24.517	1.319	263.0	259.7	1.24
3	292.650	29.420	1.733	249.0	245.6	1.35
3	292.650	34.323	2.299	232.0	227.9	1.75
3	323.150	.981	.037	324.0	322.7	.40
3	323.150	9.807	.386	312.3	310.8	.47
3	323.150	19.613	.833	298.5	296.5	.68
3	323.150	29.420	1.361	282.5	280.9	.58
3	323.150	34.323	1.869	274.4	272.5	.69
3	323.150	39.227	2.019	266.0	263.7	.85
3	323.150	44.130	2.428	257.8	254.5	1.28
3	323.150	49.033	2.923	249.5	244.9	1.86
3	323.150	53.937	3.555	241.2	235.2	2.49
3	323.150	58.840	4.425	233.0	227.2	2.50
3	323.150	63.743	5.667	227.0	227.4	-.17
3	323.150	68.647	7.040	235.0	248.6	-5.80
3	323.150	78.453	8.908	296.0	304.2	-2.76
3	323.150	88.260	9.854	347.0	357.5	-3.02
3	323.150	98.066	10.450	396.0	401.3	-1.33
3	348.150	.981	.034	334.2	333.6	.17
3	348.150	9.807	.355	325.8	324.2	.51
3	348.150	19.613	.748	314.4	313.1	.43
3	348.150	29.420	1.190	303.2	301.6	.51
3	348.150	39.227	1.695	292.2	290.0	.75
3	348.150	49.033	2.287	281.2	278.4	1.01
3	348.150	58.840	2.999	270.2	267.5	1.01
3	348.150	68.647	3.880	261.8	259.4	.93
3	348.150	73.550	4.395	259.8	257.7	.80
3	348.150	78.453	4.954	260.0	258.8	.48
3	348.150	83.357	5.539	265.0	263.1	.70
3	348.150	88.260	6.118	272.0	270.9	.41
3	348.150	93.163	6.667	280.0	281.0	-.36
3	348.150	98.066	7.175	291.0	292.3	-.45
3	348.150	102.970	7.639	304.0	304.7	-.23
3	348.150	107.873	8.059	319.0	318.2	.25
3	348.150	117.680	8.767	348.0	347.3	.19
3	373.150	.981	.032	345.1	344.2	.27
3	373.150	9.807	.328	337.9	336.5	.41
3	373.150	19.613	.683	329.5	327.8	.53
3	373.150	29.420	1.068	321.0	319.0	.61
3	373.150	39.227	1.491	312.5	310.5	.64
3	373.150	49.033	1.957	304.1	302.3	.59

Table 18. Continued.

TERRES ETHANE SPEED OF SOUND, METERS/SEC.

ID	T,K	P,BAR	MOL/L	W,XPT	CALCD	PCNT
3	373.150	58.840	2.476	297.0	294.8	.75
3	373.150	68.647	3.056	281.0	288.5	-2.68
3	373.150	78.453	3.702	286.8	284.6	.77
3	373.150	88.260	4.409	285.5	284.5	.37
3	373.150	98.066	5.153	289.5	289.5	.01
3	373.150	107.873	5.889	299.2	300.0	-.25
3	373.150	117.680	6.578	313.0	314.5	-.49
3	398.150	.981	.030	355.0	354.3	.18
3	398.150	9.807	.305	349.1	348.1	.28
3	398.150	19.613	.629	342.5	341.1	.40
3	398.150	29.420	.974	336.0	334.3	.50
3	398.150	39.227	1.343	329.5	327.8	.50
3	398.150	49.033	1.738	323.0	321.8	.38
3	398.150	58.840	2.161	317.2	316.3	.29
3	398.150	68.647	2.615	313.0	311.7	.42
3	398.150	78.453	3.100	310.7	308.3	.77
3	398.150	88.260	3.615	309.3	306.7	.84
3	398.150	98.066	4.154	309.9	307.5	.78
3	398.150	107.873	4.706	312.8	311.1	.56
3	398.150	117.680	5.257	318.2	317.7	.17
3	423.150	.981	.028	365.2	364.2	.27
3	423.150	9.807	.285	360.8	359.1	.46
3	423.150	19.613	.585	355.7	353.5	.61
3	423.150	29.420	.899	350.7	348.2	.72
3	423.150	39.227	1.229	345.8	343.2	.76
3	423.150	49.033	1.575	340.8	338.6	.66
3	423.150	58.840	1.939	336.3	334.5	.54
3	423.150	68.647	2.321	332.7	331.1	.49
3	423.150	78.453	2.720	330.2	328.5	.51
3	423.150	88.260	3.135	328.9	327.0	.57
3	423.150	98.066	3.565	329.1	326.9	.68
3	423.150	107.873	4.004	330.9	328.3	.78
3	423.150	117.680	4.448	334.3	331.6	.81
3	448.150	.981	.026	375.4	373.8	.43
3	448.150	9.807	.268	371.4	369.7	.46
3	448.150	19.613	.547	366.8	365.2	.44
3	448.150	29.420	.836	362.6	360.9	.46
3	448.150	39.227	1.136	358.2	357.0	.32
3	448.150	49.033	1.448	354.4	353.5	.24
3	448.150	58.840	1.770	351.2	350.5	.20
3	448.150	68.647	2.104	348.8	348.0	.23
3	448.150	78.453	2.448	347.2	346.1	.31
3	448.150	88.260	2.802	346.8	345.0	.52
3	448.150	98.066	3.165	347.5	344.8	.78
3	448.150	107.873	3.534	348.9	345.6	.94
3	448.150	117.680	3.906	350.9	347.6	.94

Table 19. Comparison with speeds of sound, W(ρ,T), from (9) Tsumura.

TSUMURA ETHANE SPEED OF SOUND, METERS/SEC.

ID	T,K	P,BAR	MOL/L	W,XPT	CALCD	PCNT
9	100.000	319.487	21.709	2051.3	2092.9	-2.03
9	100.000	284.948	21.670	2040.0	2080.2	-1.97
9	100.000	251.961	21.633	2028.8	2067.8	-1.92
9	100.000	217.283	21.593	2017.3	2054.6	-1.85
9	100.000	184.270	21.555	2005.7	2041.8	-1.80
9	100.000	149.807	21.514	1993.6	2028.2	-1.74
9	100.000	114.141	21.471	1981.0	2013.9	-1.66
9	100.000	79.623	21.429	1968.4	1999.8	-1.60
9	100.000	41.217	21.381	1954.2	1983.8	-1.52
9	120.000	303.424	21.106	1943.2	1982.6	-2.03
9	120.000	285.840	21.006	1914.2	1947.9	-1.76
9	120.000	189.120	20.575	1876.1	1902.9	-1.43
9	120.000	149.630	20.819	1860.0	1883.9	-1.29
9	120.000	81.052	20.719	1831.0	1850.0	-1.04
9	140.000	355.646	20.451	1819.4	1846.4	-1.49
9	140.000	147.077	20.118	1725.2	1735.4	-.59
9	140.000	78.002	19.996	1690.7	1695.6	-.29
9	140.000	284.338	20.343	1788.1	1809.8	-1.22
9	140.000	214.568	20.231	1756.7	1772.7	-.91
9	160.000	353.276	19.805	1698.2	1714.7	-.97
9	160.000	281.447	19.676	1662.8	1673.4	-.64
9	160.000	218.056	19.556	1629.9	1635.5	-.34
9	160.000	148.464	19.416	1591.7	1591.9	-.02
9	160.000	80.133	19.268	1551.5	1547.0	.29
9	180.000	356.967	19.170	1583.4	1591.6	-.52
9	180.000	286.152	19.021	1543.8	1546.7	-.19
9	180.000	216.001	18.862	1502.0	1499.9	.14
9	180.000	147.165	18.693	1457.9	1451.3	.45
9	180.000	78.794	18.511	1410.3	1399.9	.74
9	180.000	115.168	18.610	1435.6	1427.7	.55
9	200.000	141.899	17.934	1321.0	1311.5	.72
9	200.000	367.545	18.551	1475.4	1479.5	-.28
9	200.000	321.402	18.438	1446.9	1447.9	-.07
9	200.000	285.200	18.346	1423.6	1422.3	.09
9	200.000	253.809	18.262	1402.5	1399.3	.23
9	200.000	218.344	18.164	1377.9	1372.6	.39
9	200.000	183.259	18.061	1352.4	1345.2	.53
9	200.000	148.313	17.954	1325.7	1316.8	.67
9	200.000	115.229	17.848	1299.1	1288.9	.78
9	200.000	78.806	17.724	1268.2	1256.8	.90
9	200.000	49.338	17.617	1241.6	1229.7	.96
9	220.000	155.130	17.207	1200.8	1191.8	.75
9	220.000	359.773	17.381	1361.0	1361.5	-.04
9	220.000	285.348	17.060	1308.1	1304.3	.29
9	220.000	216.788	17.434	1254.4	1247.4	.56
9	220.000	147.819	17.179	1194.2	1184.9	.78
9	220.000	78.747	16.886	1125.4	1115.3	.90
9	220.000	100.571	16.983	1147.8	1138.2	.84
9	220.000	100.292	16.982	1147.5	1137.9	.84
9	240.000	342.789	17.163	1242.2	1240.9	.11
9	240.000	285.379	16.957	1195.8	1191.8	.33
9	240.000	216.704	16.681	1134.4	1127.9	.57
9	240.000	147.328	16.357	1063.4	1055.7	.72
9	240.000	78.670	15.974	980.1	973.3	.69

Table 19. Continued.

TSUMURA ETHANE SPEED OF SOUND, METERS/SEC.

ID	T,K	P,BAR	MOL/L	W,XPT	CALCD	PCNT
9	240.000	35.593	15.684	917.3	913.4	.43
9	260.000	225.294	15.937	1028.1	1019.6	.82
9	260.000	345.413	16.491	1142.5	1138.3	.37
9	260.000	319.873	16.384	1120.1	1114.9	.47
9	260.000	284.784	16.229	1087.8	1081.3	.60
9	260.000	252.868	16.078	1056.6	1049.1	.71
9	260.000	217.699	15.896	1019.5	1011.3	.81
9	260.000	175.814	15.657	971.2	962.6	.89
9	260.000	148.346	15.482	936.3	927.9	.90
9	260.000	113.645	15.236	887.6	880.0	.85
9	260.000	78.013	14.942	830.2	824.6	.67
9	260.000	51.344	14.683	780.0	777.4	.34
9	280.000	349.207	15.812	1050.9	1046.6	.41
9	280.000	285.846	15.484	987.7	981.4	.63
9	280.000	216.544	15.056	907.7	900.1	.83
9	280.000	147.522	14.512	809.9	802.9	.87
9	280.000	78.243	13.728	676.0	673.5	.37
9	280.000	368.287	15.902	1068.5	1064.9	.34
9	280.000	320.351	15.669	1023.2	1017.8	.53
9	280.000	235.347	15.481	987.4	980.9	.66
9	280.000	253.215	15.293	952.0	944.7	.76
9	280.000	216.837	15.058	908.2	900.5	.85
9	280.000	183.451	14.814	863.9	856.1	.90
9	280.000	147.380	14.510	809.9	802.6	.90
9	280.000	113.102	14.166	750.2	744.4	.78
9	280.000	78.036	13.725	675.7	673.0	.39
9	280.000	49.981	13.253	598.0	600.9	-.49
9	300.000	357.883	15.152	971.1	967.0	.42
9	300.000	285.355	14.704	892.6	886.4	.70
9	300.000	251.374	14.457	850.7	843.9	.80
9	300.000	216.716	14.170	803.6	796.4	.90
9	300.000	95.448	12.571	566.1	562.9	.57
9	300.000	95.468	12.571	566.2	562.9	.58
9	300.000	78.230	12.142	509.8	509.2	.11
9	300.000	69.997	11.883	477.2	478.5	-.27
9	320.000	163.867	12.900	610.9	604.3	1.08
9	320.000	163.809	12.499	610.9	604.2	1.10
9	320.000	162.914	12.484	606.5	602.3	1.02
9	320.000	344.819	14.351	877.1	872.3	.54
9	320.000	274.947	13.811	792.8	786.4	.81
9	320.000	216.491	13.225	707.5	700.5	.99
9	320.000	147.067	12.196	573.8	567.3	1.13
9	320.000	112.578	11.346	479.3	474.3	1.04
9	320.000	99.688	10.875	433.6	429.6	.93
9	320.000	85.875	10.145	372.5	370.0	.66
9	320.000	78.019	9.495	328.1	327.2	.28
9	320.000	73.477	8.937	297.2	298.0	-.25
9	320.000	316.099	14.145	844.1	838.7	.64
9	323.150	331.703	14.141	850.1	845.1	.58
9	323.150	285.364	13.772	793.5	787.5	.76
9	323.150	251.142	13.452	746.6	740.1	.88
9	323.150	216.653	13.073	693.5	686.7	.98
9	323.150	146.943	11.983	556.5	550.2	1.14
9	323.150	100.339	10.561	414.6	410.4	1.02
9	323.150	90.770	10.029	372.8	369.5	.89

Table 20. Calculated P(T) isochores.

The following pages give P(T) along isochores, as computed by the equation of state. The third column DP/DD is the isotherm slope $(\partial P/\partial \rho)$ in units of the bar and mol/ℓ. The last two columns give the isochore slopes and curvatures $\partial P/\partial T$, $\partial^2 P/\partial T^2$, in units of the bar and K.

These tables show that the isochore curvatures are qualitatively consistent with a maximum in the specific heat $C_v(\rho,T)$ at the critical point.

Table 20. Calculated P(T) isochores.

THE ISOCHORE AT 1.00 MOL/L

T,K	P,BAR	DP/DD	DP/DT	D2P/DT2
266.0	17.163	12.442	.1048	-.00023
274.0	17.994	13.457	.1032	-.00017
282.0	18.815	14.441	.1019	-.00014
290.0	19.626	15.403	.1009	-.00012
298.0	20.430	16.347	.1000	-.00010
306.0	21.227	17.276	.0993	-.00009
314.0	22.018	18.193	.0986	-.00008
322.0	22.805	19.099	.0980	-.00007
330.0	23.587	19.996	.0975	-.00006
338.0	24.366	20.885	.0971	-.00006
346.0	25.143	21.766	.0966	-.00005
354.0	25.918	22.641	.0963	-.00005
362.0	26.689	23.511	.0959	-.00004
370.0	27.446	24.374	.0956	-.00004
378.0	28.210	25.233	.0953	-.00004
386.0	28.971	26.088	.0950	-.00003
394.0	29.730	26.938	.0948	-.00003
402.0	30.487	27.785	.0945	-.00003
410.0	31.242	28.628	.0943	-.00003
418.0	31.996	29.468	.0941	-.00002
426.0	32.748	30.304	.0939	-.00002
434.0	33.499	31.138	.0937	-.00002
442.0	34.248	31.969	.0936	-.00002
450.0	34.996	32.798	.0934	-.00002
458.0	35.742	33.625	.0933	-.00002
466.0	36.488	34.449	.0931	-.00002
474.0	37.232	35.271	.0930	-.00002
482.0	37.976	36.091	.0929	-.00002
490.0	38.718	36.910	.0927	-.00001
498.0	39.460	37.726	.0926	-.00001
506.0	40.200	38.541	.0925	-.00001
514.0	40.940	39.355	.0924	-.00001
522.0	41.679	40.166	.0923	-.00001
530.0	42.417	40.977	.0922	-.00001
538.0	43.154	41.786	.0921	-.00001
546.0	43.891	42.593	.0920	-.00001
554.0	44.627	43.400	.0920	-.00001
562.0	45.362	44.205	.0919	-.00001
570.0	46.097	45.009	.0918	-.00001
578.0	46.831	45.812	.0917	-.00001
586.0	47.565	46.614	.0917	-.00001
594.0	48.298	47.414	.0916	-.00001

Table 20. Continued.

THE ISOCHORE AT 2.00 MOL/L

T,K	P,BAR	DP/DD	DP/DT	D2P/DT2
290.0	31.349	8.322	.2385	-.00074
298.0	33.235	9.544	.2334	-.00054
306.0	35.087	10.719	.2296	-.00042
314.0	36.912	11.861	.2266	-.00034
322.0	38.714	12.979	.2241	-.00029
330.0	40.498	14.077	.2219	-.00025
338.0	42.265	15.160	.2200	-.00022
346.0	44.019	16.230	.2184	-.00019
354.0	45.760	17.288	.2169	-.00017
362.0	47.490	18.337	.2156	-.00016
370.0	49.209	19.376	.2144	-.00014
378.0	50.920	20.407	.2133	-.00013
386.0	52.622	21.431	.2123	-.00012
394.0	54.317	22.449	.2114	-.00011
402.0	56.005	23.461	.2105	-.00010
410.0	57.686	24.467	.2098	-.00009
418.0	59.361	25.468	.2090	-.00009
426.0	61.031	26.465	.2084	-.00008
434.0	62.695	27.457	.2078	-.00008
442.0	64.355	28.446	.2072	-.00007
450.0	66.010	29.430	.2066	-.00007
458.0	67.661	30.412	.2061	-.00006
466.0	69.308	31.390	.2056	-.00006
474.0	70.951	32.364	.2051	-.00006
482.0	72.590	33.336	.2047	-.00005
490.0	74.226	34.305	.2043	-.00005
498.0	75.859	35.272	.2039	-.00005
506.0	77.489	36.236	.2035	-.00005
514.0	79.116	37.198	.2032	-.00004
522.0	80.740	38.157	.2028	-.00004
530.0	82.361	39.115	.2025	-.00004
538.0	83.980	40.070	.2022	-.00004
546.0	85.597	41.023	.2019	-.00004
554.0	87.211	41.975	.2016	-.00003
562.0	88.823	42.924	.2014	-.00003
570.0	90.433	43.872	.2011	-.00003
578.0	92.041	44.819	.2009	-.00003
586.0	93.647	45.763	.2006	-.00003
594.0	95.251	46.706	.2004	-.00003

Table 20. Continued.

THE ISOCHORE AT 3.00 MOL/L

T,K	P,BAR	DP/DD	DP/DT	D2P/DT2
298.0	40.085	4.440	.3983	-.00205
306.0	43.218	5.825	.3862	-.00115
314.0	46.276	7.137	.3785	-.00082
322.0	49.280	8.411	.3727	-.00064
330.0	52.242	9.661	.3681	-.00052
338.0	55.171	10.893	.3643	-.00044
346.0	58.072	12.111	.3610	-.00038
354.0	60.948	13.318	.3581	-.00034
362.0	63.802	14.514	.3556	-.00030
370.0	66.638	15.703	.3533	-.00027
378.0	69.456	16.884	.3513	-.00024
386.0	72.259	18.058	.3495	-.00022
394.0	75.048	19.227	.3478	-.00020
402.0	77.824	20.391	.3462	-.00018
410.0	80.588	21.549	.3448	-.00017
418.0	83.341	22.704	.3435	-.00016
426.0	86.084	23.854	.3423	-.00015
434.0	88.818	25.001	.3412	-.00014
442.0	91.543	26.144	.3401	-.00013
450.0	94.260	27.283	.3391	-.00012
458.0	96.969	28.420	.3382	-.00011
466.0	99.671	29.554	.3373	-.00011
474.0	102.366	30.685	.3365	-.00010
482.0	105.055	31.813	.3357	-.00010
490.0	107.738	32.939	.3350	-.00009
498.0	110.415	34.062	.3343	-.00009
506.0	113.086	35.184	.3336	-.00008
514.0	115.752	36.303	.3329	-.00008
522.0	118.413	37.420	.3323	-.00007
530.0	121.070	38.535	.3318	-.00007
538.0	123.721	39.648	.3312	-.00007
546.0	126.369	40.759	.3307	-.00007
554.0	129.012	41.868	.3301	-.00006
562.0	131.651	42.976	.3297	-.00006
570.0	134.286	44.082	.3292	-.00006
578.0	136.918	45.187	.3287	-.00006
586.0	139.546	46.289	.3283	-.00005
594.0	142.170	47.391	.3279	-.00005

Table 20. Continued.

THE ISOCHORE AT 4.00 MOL/L

T,K	P,BAR	DP/DD	DP/DT	D2P/DT2
306.0	47.292	2.590	.5615	-.00272
314.0	51.717	4.000	.5463	-.00141
322.0	56.048	5.371	.5370	-.00097
330.0	60.315	6.724	.5302	-.00075
338.0	64.534	8.069	.5248	-.00061
346.0	68.714	9.407	.5206	-.00052
354.0	72.860	10.740	.5164	-.00045
362.0	76.978	12.069	.5131	-.00039
370.0	81.070	13.396	.5101	-.00035
378.0	85.140	14.720	.5075	-.00031
386.0	89.191	16.041	.5051	-.00028
394.0	93.223	17.361	.5029	-.00026
402.0	97.238	18.678	.5009	-.00024
410.0	101.238	19.994	.4991	-.00022
418.0	105.224	21.308	.4974	-.00020
426.0	109.197	22.620	.4959	-.00019
434.0	113.158	23.931	.4944	-.00018
442.0	117.108	25.240	.4930	-.00017
450.0	121.046	26.548	.4917	-.00016
458.0	124.975	27.855	.4905	-.00015
466.0	128.895	29.160	.4894	-.00014
474.0	132.805	30.464	.4883	-.00013
482.0	136.707	31.766	.4872	-.00013
490.0	140.601	33.068	.4863	-.00012
498.0	144.487	34.368	.4853	-.00011
506.0	148.366	35.666	.4844	-.00011
514.0	152.238	36.964	.4836	-.00010
522.0	156.104	38.260	.4828	-.00010
530.0	159.963	39.555	.4820	-.00010
538.0	163.815	40.848	.4812	-.00009
546.0	167.662	42.141	.4805	-.00009
554.0	171.503	43.432	.4798	-.00009
562.0	175.339	44.722	.4791	-.00008
570.0	179.169	46.011	.4784	-.00008
578.0	182.994	47.299	.4778	-.00008
586.0	186.814	48.585	.4772	-.00008
594.0	190.629	49.871	.4766	-.00007

Table 20. Continued.

THE ISOCHORE AT 5.00 MOL/L

T,K	P,BAR	DP/DD	DP/DT	D2P/DT2
306.0	48.893	.831	.7461	-.00627
314.0	54.747	2.272	.7225	-.00168
322.0	60.482	3.711	.7121	-.00103
330.0	66.149	5.160	.7051	-.00076
338.0	71.767	6.619	.6997	-.00060
346.0	77.346	8.086	.6953	-.00050
354.0	82.893	9.560	.6915	-.00043
362.0	88.412	11.039	.6883	-.00038
370.0	93.907	12.524	.6855	-.00034
378.0	99.381	14.013	.6829	-.00030
386.0	104.835	15.505	.6806	-.00028
394.0	110.271	17.001	.6785	-.00025
402.0	115.691	18.500	.6765	-.00023
410.0	121.096	20.000	.6747	-.00022
418.0	126.487	21.503	.6731	-.00020
426.0	131.865	23.008	.6715	-.00019
434.0	137.231	24.514	.6700	-.00018
442.0	142.585	26.021	.6686	-.00017
450.0	147.929	27.530	.6673	-.00016
458.0	153.262	29.039	.6660	-.00015
466.0	158.586	30.549	.6648	-.00015
474.0	163.900	32.059	.6637	-.00014
482.0	169.205	33.570	.6626	-.00013
490.0	174.501	35.081	.6615	-.00013
498.0	179.789	36.592	.6605	-.00012
506.0	185.070	38.103	.6596	-.00012
514.0	190.342	39.614	.6586	-.00012
522.0	195.608	41.125	.6577	-.00011
530.0	200.866	42.636	.6568	-.00011
538.0	206.117	44.147	.6560	-.00011
546.0	211.361	45.657	.6551	-.00010
554.0	216.599	47.166	.6543	-.00010
562.0	221.831	48.675	.6536	-.00010
570.0	227.056	50.184	.6528	-.00009
578.0	232.276	51.692	.6520	-.00009
586.0	237.489	53.199	.6513	-.00009
594.0	242.697	54.706	.6506	-.00009

Table 20. Continued.

THE ISOCHORE AT 6.00 MOL/L

T,K	P,BAR	DP/DD	DP/DT	D2P/DT2
306.0	49.326	.181	.9269	-.00961
314.0	56.633	1.661	.9067	-.00107
322.0	63.859	3.220	.9103	-.00062
330.0	71.044	4.820	.8961	-.00045
338.0	78.200	6.456	.8929	-.00036
346.0	85.332	8.101	.8902	-.00031
354.0	92.444	9.771	.8879	-.00027
362.0	99.539	11.455	.8859	-.00024
370.0	106.619	13.152	.8841	-.00022
378.0	113.685	14.860	.8824	-.00020
386.0	120.739	16.577	.8809	-.00019
394.0	127.780	18.302	.8794	-.00018
402.0	134.810	20.034	.8781	-.00017
410.0	141.829	21.773	.8768	-.00016
418.0	148.838	23.516	.8755	-.00015
426.0	155.838	25.265	.8744	-.00015
434.0	162.828	27.018	.8732	-.00014
442.0	169.810	28.774	.8721	-.00014
450.0	176.782	30.534	.8710	-.00013
458.0	183.747	32.296	.8700	-.00013
466.0	190.703	34.061	.8690	-.00012
474.0	197.651	35.828	.8680	-.00012
482.0	204.591	37.597	.8671	-.00012
490.0	211.523	39.368	.8661	-.00012
498.0	218.449	41.140	.8652	-.00011
506.0	225.366	42.913	.8643	-.00011
514.0	232.277	44.687	.8634	-.00011
522.0	239.181	46.461	.8625	-.00011
530.0	246.077	48.237	.8616	-.00011
538.0	252.967	50.013	.8608	-.00011
546.0	259.850	51.789	.8600	-.00010
554.0	266.727	53.565	.8591	-.00010
562.0	273.596	55.341	.8583	-.00010
570.0	280.460	57.118	.8575	-.00010
578.0	287.317	58.894	.8567	-.00010
586.0	294.168	60.670	.8560	-.00010
594.0	301.012	62.445	.8552	-.00010

Table 20. Continued.

THE ISOCHORE AT 6.80 MOL/L

T,K	P,BAR	DP/DD	DP/DT	D2P/DT2
306.0	49.429	.181	1.0675	-.00000
314.0	57.969	2.339	1.0674	-.00001
322.0	66.508	4.497	1.0673	-.00002
330.0	75.045	6.655	1.0671	-.00003
338.0	83.581	8.812	1.0668	-.00004
346.0	92.114	10.968	1.0665	-.00004
354.0	100.645	13.124	1.0662	-.00005
362.0	109.173	15.278	1.0657	-.00005
370.0	117.697	17.430	1.0653	-.00006
378.0	126.217	19.582	1.0648	-.00006
386.0	134.733	21.732	1.0643	-.00007
394.0	143.245	23.880	1.0637	-.00007
402.0	151.752	26.026	1.0631	-.00007
410.0	160.255	28.171	1.0625	-.00008
418.0	168.753	30.314	1.0619	-.00008
426.0	177.245	32.455	1.0612	-.00008
434.0	185.732	34.594	1.0605	-.00009
442.0	194.214	36.731	1.0599	-.00009
450.0	202.690	38.866	1.0592	-.00009
458.0	211.160	40.998	1.0584	-.00009
466.0	219.625	43.129	1.0577	-.00009
474.0	228.083	45.257	1.0570	-.00009
482.0	236.536	47.384	1.0562	-.00009
490.0	244.983	49.507	1.0554	-.00010
498.0	253.423	51.629	1.0547	-.00010
506.0	261.857	53.748	1.0539	-.00010
514.0	270.286	55.865	1.0531	-.00010
522.0	278.707	57.980	1.0523	-.00010
530.0	287.123	60.093	1.0515	-.00010
538.0	295.532	62.203	1.0507	-.00010
546.0	303.935	64.310	1.0499	-.00010
554.0	312.331	66.415	1.0491	-.00010
562.0	320.721	68.518	1.0483	-.00010
570.0	329.105	70.619	1.0475	-.00010
578.0	337.482	72.717	1.0467	-.00010
586.0	345.852	74.813	1.0459	-.00010
594.0	354.217	76.906	1.0451	-.00010

Table 20. Continued.

THE ISOCHORE AT 8.00 MOL/L

T,K	P,BAR	DP/DD	DP/DT	D2P/DT2
306.0	49.669	.439	1.3182	.01336
314.0	60.389	2.519	1.3517	.00190
322.0	71.252	4.699	1.3630	.00108
330.0	82.186	6.939	1.3701	.00075
338.0	93.169	9.220	1.3753	.00056
346.0	104.188	11.534	1.3793	.00044
354.0	115.235	13.874	1.3824	.00035
362.0	126.305	16.236	1.3850	.00028
370.0	137.393	18.616	1.3870	.00023
378.0	148.497	21.012	1.3887	.00019
386.0	159.612	23.422	1.3900	.00015
394.0	170.737	25.843	1.3911	.00012
402.0	181.869	28.274	1.3919	.00009
410.0	193.007	30.715	1.3926	.00007
418.0	204.150	33.163	1.3930	.00005
426.0	215.295	35.617	1.3934	.00003
434.0	226.443	38.078	1.3935	.00001
442.0	237.592	40.544	1.3936	-.00000
450.0	248.740	43.015	1.3935	-.00001
458.0	259.888	45.489	1.3934	-.00002
466.0	271.034	47.967	1.3932	-.00003
474.0	282.178	50.448	1.3928	-.00004
482.0	293.319	52.931	1.3925	-.00005
490.0	304.457	55.416	1.3920	-.00006
498.0	315.592	57.903	1.3915	-.00007
506.0	326.722	60.392	1.3910	-.00007
514.0	337.847	62.881	1.3904	-.00008
522.0	348.967	65.372	1.3897	-.00008
530.0	360.083	67.863	1.3891	-.00009
538.0	371.192	70.354	1.3883	-.00009
546.0	382.296	72.845	1.3876	-.00010
554.0	393.394	75.337	1.3868	-.00010
562.0	404.485	77.828	1.3860	-.00010
570.0	415.570	80.318	1.3852	-.00010
578.0	426.648	82.809	1.3843	-.00011
586.0	437.719	85.298	1.3835	-.00011
594.0	448.784	87.787	1.3826	-.00011

Table 20. Continued.

THE ISOCHORE AT 9.00 MOL/L

T,K	P,BAR	DP/DD	DP/DT	D2P/DT2
306.0	50.804	2.203	1.6183	.0[illegible]874
314.[illegible]	63.929	4.971	1.6561	.0[illegible]291
322.0	77.256	7.758	1.6742	.0[illegible]180
330.0	90.702	10.576	1.6864	.0[illegible]130
338.0	104.231	13.419	1.6955	.0[illegible]100
346.0	117.825	16.285	1.7027	.0[illegible]80
354.[illegible]	131.470	19.169	1.7085	.0[illegible]65
362.0	145.158	22.068	1.7132	.0[illegible]54
370.[illegible]	158.879	24.981	1.7172	.0[illegible]45
378.0	172.630	27.905	1.7204	.0[illegible]37
386.[illegible]	186.405	30.838	1.7232	.0[illegible]31
394.0	200.200	33.780	1.7254	.00026
402.0	214.011	36.729	1.7273	.00021
410.0	227.836	39.684	1.7289	.00017
418.[illegible]	241.672	42.643	1.7301	.0[illegible]14
426.0	255.517	45.607	1.7311	.00011
434.0	269.368	48.576	1.7318	.00008
442.0	283.225	51.546	1.7324	.00006
450.[illegible]	297.086	54.520	1.7328	.00004
458.0	310.949	57.495	1.7330	.00002
466.[illegible]	324.813	60.472	1.7331	-.00000
474.0	338.677	63.450	1.7330	-.00002
482.0	352.540	66.428	1.7328	-.00003
490.0	366.401	69.407	1.7325	-.00004
498.0	380.260	72.386	1.7321	-.00005
506.0	394.115	75.365	1.7316	-.00007
514.0	407.965	78.343	1.7310	-.00007
522.[illegible]	421.811	81.321	1.7304	-.00008
530.0	435.652	84.297	1.7297	-.00009
538.0	449.486	87.273	1.7291	-.00010
546.0	463.315	90.248	1.7281	-.00011
554.0	477.137	93.221	1.7273	-.00011
562.0	490.951	96.192	1.7264	-.00012
570.0	504.758	99.162	1.7254	-.00012
578.0	518.558	102.130	1.7244	-.00013
586.0	532.349	105.096	1.7234	-.00013
594.0	546.132	108.061	1.7223	-.00013

Table 20. Continued.

THE ISOCHORE AT 10.00 MOL/L

T,K	P,BAR	DP/DD	DP/DT	D2P/DT2
306.0	55.131	7.149	2.0232	.00515
314.0	71.449	10.791	2.0534	.00286
322.0	87.956	14.398	2.0724	.00199
330.0	104.593	17.993	2.0862	.00151
338.0	121.327	21.596	2.0969	.00119
346.0	138.138	25.189	2.1055	.00097
354.0	155.012	28.791	2.1126	.00080
362.0	171.936	32.393	2.1184	.00066
370.0	188.904	35.999	2.1233	.00055
378.0	205.906	39.606	2.1273	.00046
386.0	222.939	43.214	2.1307	.00038
394.0	239.996	46.822	2.1335	.00032
402.0	257.073	50.431	2.1358	.00026
410.0	274.168	54.039	2.1377	.00021
418.0	291.276	57.646	2.1392	.00017
426.0	308.394	61.253	2.1404	.00013
434.0	325.521	64.858	2.1413	.00009
442.0	342.654	68.462	2.1419	.00006
450.0	359.791	72.063	2.1423	.00004
458.0	376.931	75.662	2.1425	.00001
466.0	394.071	79.259	2.1425	-.00001
474.0	411.213	82.853	2.1423	-.00003
482.0	428.348	86.445	2.1420	-.00005
490.0	445.482	90.033	2.1416	-.00006
498.0	462.612	93.619	2.1411	-.00008
506.0	479.738	97.201	2.1403	-.00009
514.0	496.857	100.780	2.1395	-.00011
522.0	513.969	104.355	2.1386	-.00012
530.0	531.074	107.926	2.1376	-.00013
538.0	548.171	111.494	2.1366	-.00014
546.0	565.259	115.058	2.1355	-.00015
554.0	582.338	118.618	2.1343	-.00015
562.0	599.407	122.175	2.1330	-.00016
570.0	616.466	125.727	2.1317	-.00017
578.0	633.515	129.275	2.1303	-.00017
586.0	650.552	132.819	2.1289	-.00018
594.0	667.578	136.359	2.1275	-.00018

Table 20. Continued.

THE ISOCHORE AT 11.00 MOL/L

T,K	P,BAR	DP/DD	DP/DT	D2P/DT2
298.0	46.638	12.094	2.5132	.0.0531
306.0	66.383	17.452	2.5452	.0.0309
314.0	87.332	22.091	2.5658	.0.0217
322.0	107.923	26.674	2.5813	.0.0165
330.0	128.619	31.222	2.5927	.0.0131
338.0	149.400	35.745	2.6022	.0.0106
346.0	170.249	40.248	2.6098	.0.0086
354.0	191.153	44.736	2.6161	.0.0071
362.0	212.103	49.210	2.6212	.0.0058
370.0	233.094	53.671	2.6255	.0.0048
378.0	254.118	58.121	2.6289	.0.0039
386.0	275.171	62.561	2.6317	.0.0031
394.0	296.249	66.993	2.6341	.0.0025
402.0	317.348	71.417	2.6357	.0.0019
410.0	338.464	75.831	2.6371	.0.0014
418.0	359.594	80.238	2.6379	.0.0009
426.0	380.737	84.637	2.6385	.0.0005
434.0	401.890	89.031	2.6388	.0.0002
442.0	423.051	93.378	2.6388	-.0.0001
450.0	443.921	97.748	2.6386	-.0.0004
458.0	465.320	102.138	2.6382	-.0.0007
466.0	486.131	106.458	2.6375	-.0.0009
474.0	507.228	110.802	2.6367	-.0.0011
482.0	528.318	115.138	2.6357	-.0.0013
490.0	549.399	119.466	2.6346	-.0.0015
498.0	570.471	123.786	2.6334	-.0.0016
506.0	591.532	128.099	2.6322	-.0.0018
514.0	612.583	132.404	2.6309	-.0.0019
522.0	633.620	136.701	2.6295	-.0.0020
530.0	654.645	140.991	2.6279	-.0.0021
538.0	675.657	145.274	2.6263	-.0.0022
546.0	696.655	149.549	2.6247	-.0.0023

Table 20. Continued.

THE ISOCHORE AT 12.00 MOL/L

T,K	P,BAR	DP/DD	DP/DT	D2P/DT2
290.0	41.775	23.925	3.1618	.00329
294.0	54.445	26.933	3.1736	.00265
298.0	67.159	29.897	3.1832	.00221
302.0	79.909	32.829	3.1914	.00188
306.0	92.688	35.735	3.1984	.00163
310.0	105.494	38.620	3.2045	.00142
314.0	118.323	41.487	3.2098	.00125
318.0	131.172	44.339	3.2145	.00111
322.0	144.039	47.177	3.2187	.00099
326.0	156.921	50.002	3.2224	.00088
330.0	169.816	52.816	3.2258	.00078
334.0	182.727	55.619	3.2287	.00070
338.0	195.647	58.413	3.2313	.00062
342.0	208.577	61.198	3.2337	.00055
346.0	221.516	63.974	3.2357	.00049
350.0	234.463	66.742	3.2376	.00043
354.0	247.416	69.504	3.2392	.00038
358.0	260.376	72.258	3.2406	.00033
362.0	273.341	75.004	3.2418	.00028
366.0	286.311	77.745	3.2428	.00024
370.0	299.285	80.479	3.2437	.00020
374.0	312.259	83.207	3.2444	.00016
378.0	325.238	85.930	3.2451	.00013
382.0	338.219	88.646	3.2455	.00010
386.0	351.202	91.357	3.2458	.00007
390.0	364.186	94.063	3.2461	.00004
394.0	377.171	96.764	3.2462	.00002
398.0	390.155	99.461	3.2462	-.00001
402.0	403.140	102.151	3.2461	-.00003
406.0	416.124	104.837	3.2459	-.00005
410.0	429.107	107.519	3.2457	-.00007
414.0	442.089	110.195	3.2454	-.00009
418.0	455.071	112.868	3.2450	-.00011
422.0	468.049	115.536	3.2445	-.00013
426.0	481.026	118.200	3.2439	-.00014
430.0	494.000	120.860	3.2433	-.00016
434.0	506.972	123.515	3.2427	-.00017
438.0	519.940	126.166	3.2419	-.00019
442.0	532.908	128.814	3.2412	-.00020
446.0	545.871	131.457	3.2403	-.00021
450.0	558.833	134.097	3.2395	-.00022
454.0	571.786	136.733	3.2386	-.00024
458.0	584.739	139.365	3.2376	-.00025
462.0	597.687	141.993	3.2366	-.00026
466.0	610.631	144.618	3.2355	-.00027
470.0	623.571	147.239	3.2345	-.00027
474.0	636.507	149.857	3.2333	-.00028
478.0	649.438	152.471	3.2322	-.00029
482.0	662.365	155.081	3.2310	-.00030
486.0	675.286	157.688	3.2298	-.00031
490.0	688.203	160.292	3.2286	-.00031

Table 20. Continued.

THE ISOCHORE AT 15.01 MOL/L

T,K	P,BAR	DP/DD	DP/DT	D2P/DT2
278.0	3[illegible].355	39.976	3.9769	.00133
282.0	46.276	43.673	3.9818	.00110
286.0	62.211	47.33[illegible]	3.9858	.00092
290.0	78.161	50.354	3.9892	.00078
294.0	94.124	54.549	3.9921	.00066
298.0	110.097	58.119	3.9945	.00055
302.0	126.079	61.665	3.9965	.00046
306.0	142.069	65.196	3.9982	.00038
310.0	158.065	68.696	3.9996	.00031
314.0	174.068	72.185	4.0007	.00025
318.0	190.076	75.656	4.0015	.00019
322.0	206.087	79.112	4.0022	.00013
326.0	222.097	82.554	4.0026	.00009
330.0	238.098	85.981	4.0029	.00004
334.0	254.110	89.396	4.0030	-.00000
338.0	270.121	92.798	4.0029	-.00004
342.0	286.132	96.188	4.0026	-.00008
346.0	302.142	99.566	4.0023	-.00011
350.0	318.150	102.934	4.0018	-.00014
354.0	334.156	106.291	4.0012	-.00017
358.0	350.160	109.638	4.0004	-.00020
362.0	366.161	112.975	3.9996	-.00022
366.0	382.156	116.303	3.9987	-.00024
370.0	398.149	119.622	3.9976	-.00027
374.0	414.137	122.931	3.9965	-.00029
378.0	430.121	126.233	3.9953	-.00031
382.0	446.100	129.526	3.9941	-.00033
386.0	462.073	132.811	3.9927	-.00034
390.0	478.042	136.087	3.9913	-.00036
394.0	494.004	139.356	3.9898	-.00038
398.0	509.960	142.618	3.9883	-.00039
402.0	525.910	145.872	3.9867	-.00040
406.0	541.854	149.119	3.9851	-.00042
410.0	557.791	152.359	3.9834	-.00043
414.0	573.721	155.593	3.9816	-.00044
418.0	589.644	158.819	3.9799	-.00045
422.0	605.560	162.039	3.9781	-.00046
426.0	621.468	165.253	3.9762	-.00047
430.0	637.369	168.460	3.9742	-.00048
434.0	653.262	171.661	3.9723	-.00049
438.0	669.147	174.856	3.9703	-.00050
442.0	685.025	178.044	3.9683	-.00051

Table 20. Continued.

THE ISOCHORE AT 14.00 MOL/L

T,K	P,BAR	DP/DD	DP/DT	D2P/DT2
266.0	28.931	66.447	4.9960	-.00092
270.0	48.908	70.901	4.9924	-.00088
274.0	68.871	75.324	4.9890	-.00085
278.0	88.820	79.717	4.9857	-.00083
282.0	108.757	84.083	4.9824	-.00081
286.0	128.680	88.423	4.9791	-.00081
290.0	148.590	92.738	4.9759	-.00080
294.0	168.487	97.030	4.9727	-.00080
298.0	188.371	101.300	4.9695	-.00080
302.0	208.243	105.550	4.9663	-.00081
306.0	228.102	109.779	4.9630	-.00081
310.0	247.947	113.989	4.9598	-.00082
314.0	267.780	118.181	4.9565	-.00082
318.0	287.599	122.355	4.9532	-.00083
322.0	307.406	126.512	4.9499	-.00083
326.0	327.199	130.653	4.9466	-.00084
330.0	346.979	134.779	4.9432	-.00084
334.0	366.744	138.889	4.9398	-.00085
338.0	386.497	142.985	4.9364	-.00086
342.0	406.235	147.066	4.9330	-.00086
346.0	425.960	151.134	4.9295	-.00087
350.0	445.671	155.188	4.9260	-.00087
354.0	465.369	159.230	4.9225	-.00088
358.0	485.052	163.259	4.9190	-.00088
362.0	504.721	167.276	4.9154	-.00089
366.0	524.375	171.281	4.9119	-.00089
370.0	544.016	175.275	4.9083	-.00090
374.0	563.642	179.257	4.9047	-.00090
378.0	583.253	183.228	4.9011	-.00091
382.0	602.850	187.189	4.8975	-.00091
386.0	622.433	191.139	4.8938	-.00091
390.0	642.001	195.078	4.8902	-.00092
394.0	661.554	199.008	4.8865	-.00092
398.0	681.093	202.928	4.8828	-.00092

Table 20. Continued.

THE ISOCHORE AT 15.00 MOL/L

T,K	P,BAR	DP/DD	DP/DT	D2P/DT2
250.0	22.149	101.762	6.2586	-.00344
254.0	47.156	107.129	6.2453	-.00321
258.0	72.112	112.466	6.2328	-.00303
262.0	97.020	117.779	6.2211	-.00287
266.0	121.882	123.067	6.2099	-.00273
270.0	146.700	128.321	6.1992	-.00261
274.0	171.476	133.552	6.1890	-.00251
278.0	196.212	138.759	6.1791	-.00242
282.0	220.909	143.941	6.1695	-.00235
286.0	245.568	149.098	6.1603	-.00228
290.0	270.191	154.232	6.1513	-.00222
294.0	294.779	159.344	6.1425	-.00216
298.0	319.332	164.434	6.1340	-.00211
302.0	343.851	169.503	6.1256	-.00207
306.0	368.337	174.551	6.1174	-.00203
310.0	392.791	179.579	6.1094	-.00199
314.0	417.213	184.588	6.1015	-.00196
318.0	441.603	189.577	6.0937	-.00193
322.0	465.963	194.549	6.0861	-.00190
326.0	490.292	199.502	6.0785	-.00187
330.0	514.591	204.438	6.0711	-.00185
334.0	538.861	209.357	6.0638	-.00183
338.0	563.102	214.259	6.0565	-.00180
342.0	587.313	219.145	6.0493	-.00178
346.0	611.496	224.015	6.0422	-.00177
350.0	635.651	228.870	6.0352	-.00175
354.0	659.778	233.711	6.0282	-.00173
358.0	683.877	238.535	6.0214	-.00172

Table 20. Continued.

THE ISOCHORE AT 16.00 MOL/L

T,K	P,BAR	DP/DD	DP/DT	D2P/DT2
232.0	2[illegible].533	150.543	7.8281	-.00663
234.0	36.176	153.766	7.8153	-.00642
236.0	51.794	157.027	7.8024	-.00623
238.0	67.386	160.259	7.7901	-.00605
240.0	82.954	163.484	7.7782	-.00588
242.0	98.499	166.702	7.7666	-.00572
244.0	114.021	169.913	7.7553	-.00557
246.0	129.520	173.117	7.7443	-.00543
248.0	144.998	176.313	7.7336	-.00530
250.0	160.455	179.503	7.7231	-.00517
252.0	175.891	182.685	7.7129	-.00506
254.0	191.306	185.860	7.7029	-.00495
256.0	206.702	189.029	7.6931	-.00484
258.0	222.079	192.190	7.6835	-.00474
260.0	237.436	195.344	7.6741	-.00465
262.0	252.775	198.491	7.6649	-.00456
264.0	268.096	201.632	7.6559	-.00447
266.0	283.399	204.765	7.6471	-.00439
268.0	298.684	207.892	7.6383	-.00432
270.0	313.952	211.012	7.6297	-.00424
272.0	329.203	214.125	7.6213	-.00417
274.0	344.437	217.232	7.6130	-.00411
276.0	359.655	220.332	7.6049	-.00404
278.0	374.857	223.426	7.5969	-.00398
280.0	390.043	226.513	7.5890	-.00392
282.0	405.213	229.594	7.5812	-.00387
284.0	420.368	232.669	7.5735	-.00381
286.0	435.507	235.738	7.5659	-.00376
288.0	450.631	238.800	7.5585	-.00371
290.0	465.741	241.857	7.5511	-.00366
292.0	480.836	244.907	7.5438	-.00362
294.0	495.916	247.952	7.5366	-.00357
296.0	510.982	250.991	7.5295	-.00353
298.0	526.034	254.023	7.5225	-.00349
300.0	541.072	257.050	7.5156	-.00345
302.0	556.097	260.071	7.5087	-.00341
304.0	571.107	263.087	7.5019	-.00337
306.0	586.104	266.097	7.4952	-.00334
308.0	601.088	269.102	7.4886	-.00330
310.0	616.059	272.101	7.4820	-.00327
312.0	631.016	275.095	7.4755	-.00323
314.0	645.961	278.084	7.4691	-.00320
316.0	660.893	281.067	7.4627	-.00317
318.0	675.812	284.045	7.4564	-.00314
320.0	690.718	287.018	7.4501	-.00311

Table 20. Continued.

THE ISOCHORE AT 17.00 MOL/L

T,K	P,BAR	DP/DD	DP/DT	D2P/DT2
210.0	6.794	211.912	9.8194	-.01142
212.0	26.410	215.872	9.7969	-.01107
214.0	45.982	219.824	9.7751	-.01074
216.0	65.511	223.768	9.7543	-.01043
218.0	84.998	227.706	9.7334	-.01014
220.0	104.445	231.635	9.7134	-.00986
222.0	123.852	235.556	9.6939	-.00960
224.0	143.221	239.470	9.6750	-.00935
226.0	162.552	243.375	9.6565	-.00912
228.0	181.847	247.272	9.6385	-.00890
230.0	201.107	251.161	9.6209	-.00869
232.0	220.331	255.042	9.6037	-.00849
234.0	239.522	258.914	9.5869	-.00830
236.0	258.679	262.778	9.5705	-.00812
238.0	277.804	266.634	9.5545	-.00794
240.0	296.897	270.481	9.5387	-.00778
242.0	315.959	274.321	9.5233	-.00762
244.0	334.991	278.152	9.5082	-.00747
246.0	353.993	281.974	9.4934	-.00733
248.0	372.965	285.789	9.4789	-.00719
250.0	391.908	289.596	9.4647	-.00706
252.0	410.824	293.395	9.4507	-.00693
254.0	429.711	297.185	9.4370	-.00681
256.0	448.572	300.968	9.4234	-.00669
258.0	467.405	304.743	9.4102	-.00658
260.0	486.213	308.510	9.3971	-.00647
262.0	504.994	312.270	9.3843	-.00637
264.0	523.750	316.021	9.3716	-.00627
266.0	542.481	319.766	9.3592	-.00617
268.0	561.187	323.502	9.3469	-.00608
270.0	579.868	327.231	9.3349	-.00599
272.0	598.526	330.953	9.3230	-.00591
274.0	617.160	334.667	9.3112	-.00582
276.0	635.771	338.374	9.2997	-.00574
278.0	654.359	342.074	9.2883	-.00567
280.0	672.924	345.767	9.2770	-.00559
282.0	691.467	349.452	9.2659	-.00552

Table 20. Continued.

THE ISOCHORE AT 18.00 MOL/L

T,K	P,BAR	DP/DD	DP/DT	D2P/DT2
188.0	16.109	296.410	12.3420	-.01838
190.0	40.757	301.279	12.3058	-.01782
192.0	65.333	306.140	12.2707	-.01729
194.0	89.841	310.992	12.2366	-.01679
196.0	114.281	315.834	12.2035	-.01631
198.0	138.655	320.667	12.1714	-.01586
200.0	162.967	325.490	12.1401	-.01543
202.0	187.216	330.303	12.1096	-.01503
204.0	211.406	335.107	12.0800	-.01464
206.0	235.537	339.900	12.0513	-.01428
208.0	259.610	344.683	12.0228	-.01393
210.0	283.628	349.456	11.9953	-.01359
212.0	307.592	354.219	11.9685	-.01328
214.0	331.503	358.971	11.9422	-.01297
216.0	355.361	363.713	11.9166	-.01268
218.0	379.169	368.445	11.8915	-.01241
220.0	402.928	373.167	11.8669	-.01214
222.0	426.637	377.879	11.8429	-.01189
224.0	450.300	382.581	11.8194	-.01164
226.0	473.915	387.272	11.7963	-.01141
228.0	497.485	391.953	11.7737	-.01119
230.0	521.011	396.624	11.7516	-.01097
232.0	544.492	401.285	11.7298	-.01076
234.0	567.930	405.937	11.7085	-.01057
236.0	591.326	410.578	11.6876	-.01037
238.0	614.681	415.210	11.6673	-.01019
240.0	637.994	419.832	11.6468	-.01001
242.0	661.268	424.444	11.6276	-.00984
244.0	684.502	429.047	11.6074	-.00968

Table 20. Continued.

THE ISOCHORE AT 19.00 MOL/L

T,K	P,BAR	DP/DD	DP/DT	D2P/DT2
163.0	14.595	401.982	15.6569	-.03038
164.0	30.237	405.000	15.6268	-.02987
165.0	45.849	408.016	15.5972	-.02938
166.0	61.432	411.029	15.5680	-.02890
167.0	76.985	414.040	15.5394	-.02844
168.0	92.511	417.048	15.5111	-.02799
169.0	108.008	420.054	15.4834	-.02755
170.0	123.478	423.057	15.4561	-.02712
171.0	138.920	426.057	15.4291	-.02670
172.0	154.336	429.055	15.4026	-.02630
173.0	169.726	432.049	15.3765	-.02590
174.0	185.089	435.041	15.3508	-.02552
175.0	200.427	438.030	15.3255	-.02515
176.0	215.740	441.016	15.3005	-.02478
177.0	231.029	443.999	15.2759	-.02443
178.0	246.292	446.979	15.2517	-.02408
179.0	261.532	449.956	15.2278	-.02375
180.0	276.748	452.931	15.2042	-.02342
181.0	291.940	455.902	15.1809	-.02310
182.0	307.110	458.870	15.1580	-.02278
183.0	322.257	461.835	15.1354	-.02248
184.0	337.381	464.797	15.1130	-.02218
185.0	352.483	467.756	15.0910	-.02189
186.0	367.563	470.712	15.0692	-.02161
187.0	382.621	473.665	15.0478	-.02133
188.0	397.658	476.614	15.0266	-.02106
189.0	412.674	479.561	15.0056	-.02080
190.0	427.670	482.504	14.9850	-.02054
191.0	442.644	485.445	14.9646	-.02029
192.0	457.599	488.382	14.9444	-.02004
193.0	472.533	491.316	14.9245	-.01980
194.0	487.448	494.247	14.9048	-.01957
195.0	502.343	497.175	14.8853	-.01934
196.0	517.219	500.100	14.8661	-.01911
197.0	532.075	503.021	14.8471	-.01889
198.0	546.913	505.940	14.8283	-.01868
199.0	561.732	508.855	14.8097	-.01847
200.0	576.532	511.767	14.7914	-.01826
201.0	591.315	514.677	14.7732	-.01806
202.0	606.079	517.583	14.7553	-.01786
203.0	620.825	520.486	14.7375	-.01767
204.0	635.554	523.385	14.7199	-.01748
205.0	650.265	526.282	14.7025	-.01730
206.0	664.959	529.176	14.6853	-.01711
207.0	679.636	532.066	14.6683	-.01694
208.0	694.296	534.954	14.6514	-.01676

Table 20. Continued.

THE ISOCHORE AT 20.00 MOL/L

T,K	P,BAR	DP/DD	DP/DT	D2P/DT2
136.0	.290	535.387	20.1038	-.05204
137.0	20.367	539.100	20.0522	-.05104
138.0	40.394	542.813	20.0017	-.05007
139.0	60.371	546.525	19.9521	-.04913
140.0	80.299	550.235	19.9034	-.04822
141.0	100.178	553.945	19.8556	-.04733
142.0	120.010	557.653	19.8087	-.04648
143.0	139.796	561.359	19.7627	-.04565
144.0	159.536	565.064	19.7174	-.04484
145.0	179.231	568.767	19.6730	-.04406
146.0	198.882	572.469	19.6293	-.04330
147.0	218.490	576.168	19.5864	-.04256
148.0	238.055	579.866	19.5442	-.04185
149.0	257.579	583.561	19.5027	-.04115
150.0	277.061	587.254	19.4619	-.04048
151.0	296.503	590.945	19.4217	-.03982
152.0	315.905	594.633	19.3822	-.03918
153.0	335.267	598.319	19.3434	-.03856
154.0	354.591	602.003	19.3051	-.03795
155.0	373.878	605.684	19.2674	-.03737
156.0	393.127	609.363	19.2304	-.03679
157.0	412.339	613.039	19.1938	-.03624
158.0	431.514	616.712	19.1579	-.03570
159.0	450.655	620.382	19.1225	-.03517
160.0	469.759	624.050	19.0875	-.03465
161.0	488.830	627.715	19.0531	-.03415
162.0	507.866	631.377	19.0192	-.03366
163.0	526.868	635.036	18.9858	-.03319
164.0	545.838	638.692	18.9529	-.03272
165.0	564.774	642.345	18.9204	-.03227
166.0	583.679	645.995	18.8883	-.03183
167.0	602.551	649.643	18.8567	-.03140
168.0	621.392	653.287	18.8255	-.03098
169.0	640.202	656.928	18.7947	-.03057
170.0	658.982	660.566	18.7644	-.03017
171.0	677.731	664.201	18.7344	-.02978
172.0	696.451	667.832	18.7048	-.02940

Table 20. Continued.

THE ISOCHORE AT 21.00 MOL/L

T,K	P,BAR	DP/DD	DP/DT	D2P/DT2
109.0	.393	710.125	26.0142	-.08877
110.0	26.363	714.469	25.9264	-.08670
111.0	52.247	718.823	25.8407	-.08471
112.0	78.045	723.188	25.7570	-.08279
113.0	103.761	727.561	25.6751	-.08094
114.0	129.396	731.944	25.5951	-.07916
115.0	154.952	736.335	25.5168	-.07744
116.0	180.430	740.734	25.4402	-.07579
117.0	205.833	745.141	25.3652	-.07419
118.0	231.161	749.554	25.2918	-.07264
119.0	256.417	753.974	25.2199	-.07115
120.0	281.602	758.400	25.1495	-.06971
121.0	306.717	762.832	25.0805	-.06832
122.0	331.763	767.270	25.0128	-.06697
123.0	356.743	771.712	24.9465	-.06567
124.0	381.657	776.159	24.8815	-.06441
125.0	406.506	780.611	24.8177	-.06320
126.0	431.292	785.066	24.7551	-.06202
127.0	456.016	789.526	24.6936	-.06087
128.0	480.680	793.989	24.6333	-.05977
129.0	505.283	798.454	24.5741	-.05870
130.0	529.828	802.923	24.5159	-.05766
131.0	554.316	807.395	24.4587	-.05665
132.0	578.746	811.869	24.4026	-.05567
133.0	603.121	816.345	24.3474	-.05473
134.0	627.441	820.823	24.2931	-.05381
135.0	651.708	825.303	24.2398	-.05291
136.0	675.921	829.785	24.1873	-.05205

THE ISOCHORE AT 22.00 MOL/L

T,K	P,BAR	DP/DD	DP/DT	D2P/DT2
96.0	471.642	984.690	31.8230	-.09388
97.0	502.818	989.514	31.7302	-.09178
98.0	534.503	994.379	31.6394	-.08976
99.0	566.698	999.281	31.5506	-.08781
100.0	597.605	1004.220	31.4638	-.08595
101.0	629.026	1009.194	31.3787	-.08415
102.0	660.963	1014.202	31.2954	-.08242
103.0	691.617	1019.242	31.2139	-.08076

Table 21. Calculated P(ρ) isotherms.

The following pages gives P(ρ) isotherms, as computed by the equation of state (5). The third column DP/DD is the isotherm slope $(\partial P/\partial \rho)$ in units of the bar and mol/ℓ. The last two columns give the isochore slopes and curvatures, DP/DT ≡ $(\partial P/\partial T)$, D2P/DT2 ≡ $(\partial^2 P/\partial T^2)$ in units of the bar and Kelvins.

These tables show that $\partial P/\partial \rho$ is non-negative, and that it increases monotonically with density to pressures about twice those used for adjusting the equation of state.

Table 21. Calculated P(ρ) isotherms.

THE ISOTHERM AT 95.00 DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
21.55	32.304	828.120	29.8533	-.113097
21.60	74.131	844.951	30.0757	-.111436
21.65	116.801	861.843	30.2997	-.109723
21.70	160.316	878.777	30.5254	-.107954
21.75	204.679	895.731	30.7528	-.106129
21.80	249.889	912.683	30.9820	-.104244

THE ISOTHERM AT 100.00 DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
21.35	16.822	783.592	28.4217	-.104420
21.40	56.416	800.187	28.6444	-.103266
21.45	96.841	816.904	28.8687	-.102074
21.50	138.107	833.732	29.0949	-.100841
21.55	180.217	850.656	29.3229	-.099567
21.60	223.175	867.661	29.5526	-.098249
21.65	266.984	884.732	29.7843	-.096885
21.70	311.649	901.849	30.0179	-.095475
21.75	357.170	918.992	30.2535	-.094017
21.80	403.548	936.139	30.4912	-.092508
21.85	450.783	953.265	30.7309	-.090948
21.90	498.873	970.341	30.9729	-.089335
21.95	547.815	987.338	31.2171	-.087669
22.00	597.605	1004.220	31.4638	-.085946

THE ISOTHERM AT 110.00 DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
21.00	26.363	714.469	25.9264	-.088700
21.05	62.482	730.306	26.1448	-.086159
21.10	99.397	746.324	26.3650	-.085598
21.15	137.117	762.518	26.5871	-.085015
21.20	175.652	778.882	26.8110	-.084409
21.25	215.008	795.409	27.0369	-.083779
21.30	255.195	812.093	27.2647	-.083124
21.35	296.220	828.926	27.4945	-.082442
21.40	338.090	845.898	27.7263	-.081733
21.45	380.811	862.999	27.9602	-.080995
21.50	424.391	880.219	28.1962	-.080226
21.55	468.835	897.545	28.4343	-.079427
21.60	514.148	914.962	28.6747	-.078596
21.65	560.333	932.456	28.9173	-.077732
21.70	607.395	950.008	29.1623	-.076834
21.75	655.335	967.600	29.4096	-.075902
21.80	704.155	985.210	29.6594	-.074933

Table 21. Continued.

THE ISOTHERM AT 120.00 DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
20.60	3.211	635.681	23.4394	-.071609
20.65	35.360	650.316	23.6466	-.071409
20.70	68.246	665.156	23.8556	-.071201
20.75	101.879	680.198	24.0665	-.070982
20.80	136.270	695.443	24.2793	-.070753
20.85	171.427	710.887	24.4939	-.070513
20.90	207.362	726.530	24.7105	-.070259
20.95	244.083	742.369	24.9290	-.069993
21.00	281.602	758.406	25.1495	-.069712
21.05	319.926	774.622	25.3719	-.069415
21.10	359.067	791.029	25.5964	-.069103
21.15	399.032	807.618	25.8229	-.068774
21.20	439.832	824.384	26.0516	-.068427
21.25	481.474	841.320	26.2823	-.068062
21.30	523.966	858.426	26.5152	-.067678
21.35	567.318	875.677	26.7504	-.067274
21.40	611.537	893.083	26.9877	-.066849
21.45	656.627	910.627	27.2274	-.066402
21.50	702.601	928.301	27.4695	-.065934
21.55	749.461	946.092	27.7140	-.065443

THE ISOTHERM AT 140.00 DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
19.85	.597	512.755	19.3547	-.048031
19.90	26.541	525.051	19.5359	-.048092
19.95	53.105	537.543	19.7188	-.048154
20.00	80.299	550.235	19.9034	-.048217
20.05	108.132	563.128	20.0898	-.048280
20.10	136.615	576.224	20.2779	-.048343
20.15	165.758	589.523	20.4678	-.048404
20.20	195.571	603.028	20.6595	-.048464
20.25	226.064	616.740	20.8530	-.048522
20.30	257.248	630.660	21.0483	-.048577
20.35	289.134	644.789	21.2455	-.048629
20.40	321.731	659.128	21.4445	-.048677
20.45	355.050	673.678	21.6453	-.048721
20.50	389.102	688.440	21.8481	-.048761
20.55	423.897	703.415	22.0528	-.048797
20.60	459.447	718.602	22.2594	-.048826
20.65	495.761	734.002	22.4680	-.048850
20.70	532.851	749.615	22.6786	-.048868
20.75	570.726	765.440	22.8912	-.048879
20.80	609.398	781.477	23.1058	-.048883
20.85	648.877	797.725	23.3226	-.048880
20.90	689.174	814.184	23.5415	-.048869
20.95	730.299	830.850	23.7625	-.048850

Table 21. Continued.

THE ISOTHERM AT 160.00 DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
19.10	7.765	412.780	16.0560	-.032216
19.15	28.657	422.966	16.2111	-.032333
19.20	50.064	433.322	16.3676	-.032453
19.25	71.993	443.851	16.5257	-.032577
19.30	94.452	454.556	16.6853	-.032704
19.35	117.451	465.437	16.8464	-.032834
19.40	140.999	476.499	17.0091	-.032967
19.45	165.104	487.742	17.1734	-.033101
19.50	189.776	499.169	17.3392	-.033238
19.55	215.024	510.783	17.5066	-.033377
19.60	240.858	522.585	17.6757	-.033516
19.65	267.286	534.578	17.8463	-.033657
19.70	294.319	546.764	18.0186	-.033799
19.75	321.966	559.145	18.1925	-.033941
19.80	350.236	571.723	18.3681	-.034084
19.85	379.141	584.500	18.5454	-.034226
19.90	408.690	597.479	18.7244	-.034369
19.95	438.893	610.662	18.9051	-.034511
20.00	469.759	624.050	19.0875	-.034653
20.05	501.301	637.646	19.2717	-.034794
20.10	533.528	651.451	19.4577	-.034933
20.15	566.450	665.467	19.6455	-.035072
20.20	600.078	679.697	19.8351	-.035209
20.25	634.423	694.141	20.0265	-.035344
20.30	669.495	708.802	20.2198	-.035477
20.35	705.307	723.681	20.4150	-.035608
20.40	741.867	738.779	20.6121	-.035737

Table 21. Continued.

THE ISOTHERM AT 180.00 DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
.05	.728	14.183	.0043	-.000002
18.30	6.710	323.616	13.2566	-.021561
18.35	23.097	331.884	13.3872	-.021672
18.40	39.900	340.292	13.5191	-.021787
18.45	57.128	348.844	13.6522	-.021906
18.50	74.787	357.540	13.7866	-.022029
18.55	92.885	366.383	13.9224	-.022155
18.60	111.428	375.374	14.0594	-.022284
18.65	130.425	384.517	14.1978	-.022417
18.70	149.882	393.813	14.3374	-.022552
18.75	169.808	403.265	14.4785	-.022690
18.80	190.211	412.874	14.6209	-.022831
18.85	211.099	422.643	14.7646	-.022974
18.90	232.478	432.574	14.9097	-.023120
18.95	254.359	442.669	15.0563	-.023268
19.00	276.748	452.931	15.2042	-.023417
19.05	299.655	463.361	15.3535	-.023569
19.10	323.087	473.963	15.5043	-.023722
19.15	347.053	484.738	15.6565	-.023877
19.20	371.564	495.689	15.8102	-.024034
19.25	396.626	506.819	15.9654	-.024192
19.30	422.248	518.128	16.1220	-.024351
19.35	448.441	529.621	16.2802	-.024511
19.40	475.214	541.300	16.4399	-.024672
19.45	502.575	553.166	16.6011	-.024834
19.50	530.533	565.222	16.7638	-.024997
19.55	559.100	577.471	16.9282	-.025161
19.60	588.284	589.914	17.0941	-.025325
19.65	618.095	602.555	17.2616	-.025490
19.70	648.543	615.396	17.4308	-.025655
19.75	679.638	628.439	17.6016	-.025820
19.80	711.390	641.687	17.7741	-.025985
19.85	743.810	655.141	17.9482	-.026150

Table 21. Continued.

THE ISOTHERM AT 200.00 DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
.05	.813	15.920	.0042	-.000021
.10	1.592	15.241	.0086	-.000004
17.45	6.343	246.491	10.8812	-.014237
17.50	18.832	253.080	10.9903	-.014331
17.55	31.653	259.783	11.1005	-.014429
17.60	44.813	266.601	11.2117	-.014529
17.65	58.315	273.535	11.3240	-.014633
17.70	72.168	280.588	11.4373	-.014739
17.75	86.376	287.761	11.5517	-.014849
17.80	100.946	295.055	11.6672	-.014961
17.85	115.884	302.474	11.7838	-.015075
17.90	131.196	310.018	11.9014	-.015192
17.95	146.888	317.689	12.0202	-.015312
18.00	162.967	325.490	12.1401	-.015434
18.05	179.439	333.422	12.2611	-.015558
18.10	196.311	341.487	12.3833	-.015685
18.15	213.590	349.686	12.5066	-.015813
18.20	231.282	358.023	12.6311	-.015944
18.25	249.394	366.499	12.7567	-.016076
18.30	267.934	375.116	12.8836	-.016211
18.35	286.908	383.876	13.0116	-.016347
18.40	306.324	392.782	13.1409	-.016485
18.45	326.189	401.834	13.2714	-.016625
18.50	346.510	411.036	13.4031	-.016766
18.55	367.295	420.390	13.5361	-.016909
18.60	388.552	429.898	13.6703	-.017054
18.65	410.288	439.561	13.8059	-.017200
18.70	432.511	449.383	13.9427	-.017348
18.75	455.229	459.366	14.0808	-.017497
18.80	478.450	469.511	14.2202	-.017647
18.85	502.183	479.822	14.3610	-.017799
18.90	526.435	490.300	14.5031	-.017952
18.95	551.215	500.947	14.6465	-.018106
19.00	576.532	511.767	14.7914	-.018262
19.05	602.395	522.762	14.9376	-.018418
19.10	628.812	533.934	15.0852	-.018576
19.15	655.791	545.285	15.2343	-.018734
19.20	683.343	556.819	15.3848	-.018894
19.25	711.476	568.537	15.5368	-.019054
19.30	740.200	580.442	15.6902	-.019215

Table 21. Continued.

THE ISOTHERM AT 220.00 DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
.10	1.765	17.029	.0086	-.000002
.20	3.4[illegible]6	15.797	.0178	-.000013
16.60	20.901	187.103	8.9560	-.009127
16.70	40.137	197.667	9.1402	-.009299
16.80	60.447	208.604	9.3279	-.009479
16.90	81.870	219.922	9.5189	-.009667
17.00	104.445	231.635	9.7134	-.009862
17.10	128.211	243.753	9.9114	-.010063
17.20	153.210	256.288	10.1131	-.010271
17.30	179.483	269.254	10.3185	-.010485
17.40	207.075	282.662	10.5277	-.010705
17.50	236.031	296.525	10.7408	-.010931
17.60	266.396	310.858	10.9577	-.011162
17.70	298.218	325.674	11.1788	-.011399
17.80	331.547	340.988	11.4039	-.011641
17.90	366.433	356.814	11.6333	-.011888
18.00	402.928	373.167	11.8669	-.012140
18.10	441.085	390.064	12.1050	-.012398
18.20	480.959	407.519	12.3475	-.012660
18.30	522.608	425.550	12.5946	-.012927
18.40	566.089	444.174	12.8465	-.013198
18.50	611.463	463.408	13.1031	-.013474
18.60	658.791	483.269	13.3646	-.013755
18.70	708.138	503.776	13.6311	-.014040

Table 21. Continued.

THE ISOTHERM AT 24[illegible] DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
.10	1.936	18.783	.0085	-.000002
.20	3.759	17.677	.0176	-.000008
.30	5.471	16.559	.0271	-.000021
.40	7.071	15.441	.0373	-.000041
.50	8.559	14.326	.0481	-.000077
15.50	11.7[illegible]	122.437	7.0063	-.005165
15.60	24.403	130.368	7.1555	-.005198
15.70	37.803	137.979	7.3072	-.005364
15.80	52.[illegible]8	146.181	7.4615	-.005532
15.90	67.049	154.579	7.6185	-.005704
16.00	82.954	163.484	7.7782	-.005878
16.10	99.756	172.614	7.9407	-.006055
16.20	117.486	182.049	8.1060	-.006234
16.30	136.177	191.827	8.2742	-.006417
16.40	155.863	201.949	8.4454	-.006603
16.50	176.578	212.425	8.6196	-.006791
16.60	198.360	223.265	8.7970	-.006982
16.70	221.244	234.479	8.9775	-.007177
16.80	245.268	246.079	9.1612	-.007375
16.90	270.473	258.176	9.3483	-.007576
17.00	296.897	270.491	9.5387	-.007780
17.10	324.583	283.317	9.7327	-.007987
17.20	353.573	296.566	9.9301	-.008198
17.30	383.911	310.271	10.1312	-.008413
17.40	415.643	324.434	10.3359	-.008630
17.50	448.814	339.069	10.5445	-.008852
17.60	483.473	354.191	10.7569	-.009077
17.70	519.669	369.813	10.9732	-.009306
17.80	557.453	385.950	11.1936	-.009538
17.90	596.877	402.618	11.4181	-.009774
18.00	637.994	419.832	11.6468	-.010014
18.10	680.862	437.608	11.8798	-.010258
18.20	725.535	455.962	12.1173	-.010505

Table 21. Continued.

THE ISOTHERM AT 260.00 DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
.10	2.106	20.543	.0085	-.000001
.20	4.110	19.520	.0174	-.000005
.30	6.010	18.501	.0268	-.000013
.40	7.810	17.487	.0366	-.000025
.50	9.508	16.484	.0469	-.000043
.60	11.107	15.493	.0577	-.000068
.70	12.607	14.515	.0690	-.000101
.80	14.010	13.549	.0808	-.000146
.90	15.317	12.595	.0932	-.000208
1.00	16.530	11.652	.1063	-.000295
14.30	18.970	74.130	5.3490	-.001671
14.40	26.641	79.333	5.4684	-.001866
14.50	34.843	84.744	5.5897	-.002054
14.60	43.597	90.368	5.7130	-.002238
14.70	52.924	96.212	5.8383	-.002418
14.80	62.847	102.282	5.9657	-.002595
14.90	73.388	108.585	6.0952	-.002770
15.00	84.572	115.127	6.2269	-.002942
15.10	96.422	121.916	6.3608	-.003113
15.20	108.964	128.958	6.4970	-.003284
15.30	122.222	136.261	6.6354	-.003454
15.40	136.225	143.833	6.7763	-.003623
15.50	150.998	151.680	6.9196	-.003793
15.60	166.570	159.812	7.0653	-.003963
15.70	182.970	168.235	7.2136	-.004133
15.80	200.227	176.959	7.3644	-.004304
15.90	218.372	185.993	7.5179	-.004476
16.00	237.436	195.344	7.6741	-.004649
16.10	257.452	205.023	7.8330	-.004823
16.20	278.452	215.038	7.9947	-.004999
16.30	300.471	225.400	8.1593	-.005176
16.40	323.544	236.117	8.3269	-.005356
16.50	347.707	247.202	8.4974	-.005536
16.60	372.997	258.664	8.6709	-.005719
16.70	399.453	270.515	8.8476	-.005904
16.80	427.113	282.765	9.0275	-.006092
16.90	456.019	295.426	9.2106	-.006282
17.00	486.213	308.510	9.3971	-.006474
17.10	517.736	322.030	9.5870	-.006668
17.20	550.634	335.998	9.7804	-.006866
17.30	584.951	350.427	9.9773	-.007066
17.40	620.735	365.331	10.1778	-.007269
17.50	658.033	380.724	10.3821	-.007475
17.60	696.896	396.619	10.5901	-.007684
17.70	737.375	413.032	10.8020	-.007897

Table 21. Continued.

THE ISOTHERM AT 280.00 DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
.20	4.458	21.339	.6174	-.0[illegible]
.40	8.538	19.472	.0362	-.0[illegible]
.60	12.249	17.652	.0566	-.0[illegible]
.80	15.603	15.892	.0786	-.0[illegible]
1.00	18.611	14.197	.1022	-.0[illegible]
1.20	21.286	12.568	.1275	-.0[illegible]
1.40	23.642	11.004	.1546	-.0[illegible]
1.60	25.692	9.502	.1836	-.0[illegible]
1.80	27.447	8.058	.2148	-.0[illegible]
12.80	30.573	35.683	3.7975	.0[illegible]
13.00	38.315	41.838	3.9795	.0[illegible]
13.20	47.343	46.548	4.1673	.0[illegible]
13.40	57.775	55.876	4.3613	.0[illegible]
13.60	69.756	63.851	4.5619	-.0[illegible]
13.80	83.361	72.514	4.7694	-.0[illegible]
14.00	98.790	81.903	4.9840	-.0[illegible]
14.20	116.174	92.064	5.2061	-.001147
14.40	135.670	103.040	5.4358	-.001464
14.60	157.447	114.889	5.6736	-.001775
14.80	181.683	127.633	5.9196	-.002081
15.00	208.565	141.352	6.1743	-.002385
15.20	238.292	156.096	6.4379	-.002688
15.40	271.074	171.916	6.7108	-.002992
15.60	307.135	188.882	6.9933	-.003298
15.80	346.718	207.057	7.2859	-.003608
16.00	390.043	226.513	7.5890	-.003922
16.20	437.403	247.324	7.9029	-.004241
16.40	489.068	269.568	8.2282	-.004567
16.60	545.332	293.330	8.5653	-.004900
16.80	606.507	318.696	8.9147	-.005240
17.00	672.924	345.767	9.2770	-.005590
17.20	744.934	374.636	9.6527	-.005950

Table 21. Continued.

THE ISOTHERM AT 290.00 DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
.20	4.631	22.241	.0173	-.000003
.40	8.699	20.448	.0360	-.000015
.60	12.813	18.754	.0562	-.000037
.80	16.985	17.021	.0778	-.000071
1.00	19.626	15.403	.1009	-.000118
1.20	22.550	13.852	.1254	-.000183
1.40	25.172	12.369	.1514	-.000268
1.60	27.503	10.953	.1789	-.000382
1.80	29.557	9.604	.2079	-.000535
2.00	31.349	8.322	.2385	-.000745
2.20	32.891	7.106	.2707	-.001050
2.40	34.196	5.954	.3049	-.001532
11.80	37.395	19.923	3.0123	.004200
12.00	41.773	23.925	3.1618	.003293
12.20	46.994	28.353	3.3160	.002604
12.40	53.145	33.239	3.4756	.002046
12.60	60.322	38.613	3.6408	.001572
12.80	68.625	44.507	3.8119	.001155
13.00	78.161	50.954	3.9892	.000779
13.20	89.046	57.969	4.1729	.000430
13.40	101.398	65.646	4.3632	.000103
13.60	115.348	73.964	4.5603	-.000209
13.80	131.030	82.981	4.7645	-.000510
14.00	148.590	92.738	4.9759	-.000813
14.20	168.178	103.279	5.1949	-.001127
14.40	189.957	114.656	5.4217	-.001474
14.60	214.096	126.898	5.6565	-.001856
14.80	240.778	140.074	5.8996	-.002286
15.00	270.191	154.232	6.1513	-.002777
15.20	302.540	169.429	6.4120	-.003349
15.40	338.036	185.724	6.6819	-.004024
15.60	376.907	203.181	6.9615	-.004832
15.80	419.391	221.868	7.2511	-.005814
16.00	465.741	241.857	7.5511	-.007026
16.20	516.225	263.221	7.8619	-.008553
16.40	571.126	286.043	8.1840	-.010527
16.60	630.745	310.407	8.5179	-.013137
16.80	695.398	336.412	8.8640	-.016649

Table 21. Continued.

THE ISOTHERM AT 300.00 DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
.20	4.804	23.140	.0173	-.000003
.40	9.259	21.417	.0359	-.000013
.60	13.374	19.742	.0559	-.000032
.80	17.160	18.128	.0772	-.000059
1.00	20.630	16.580	.0998	-.000097
1.20	23.796	15.099	.1238	-.000147
1.40	26.674	13.684	.1491	-.000210
1.60	29.275	12.336	.1756	-.000288
1.80	31.613	11.055	.2034	-.000384
2.00	33.701	9.841	.2324	-.000501
2.20	35.554	8.696	.2626	-.000645
2.40	37.184	7.618	.2939	-.000822
2.60	38.605	6.609	.3263	-.001044
2.80	39.832	5.669	.3599	-.001329
3.00	40.878	4.797	.3946	-.001705
3.20	41.755	3.993	.4305	-.002228
3.40	42.479	3.255	.4676	-.003008
3.60	43.062	2.581	.5065	-.004308
3.80	43.515	1.964	.5479	-.006961
10.20	44.111	5.716	2.0773	.010552
10.40	45.416	7.375	2.1831	.008009
10.60	47.077	9.277	2.2922	.006422
10.80	49.145	11.445	2.4054	.005317
11.00	51.674	13.902	2.5230	.004487
11.20	54.727	16.673	2.6454	.003829
11.40	58.366	19.779	2.7729	.003284
11.60	62.662	23.246	2.9056	.002817
11.80	67.690	27.100	3.0437	.002405
12.00	73.530	31.366	3.1875	.002034
12.20	80.266	36.073	3.3369	.001693
12.40	87.990	41.249	3.4923	.001374
12.60	96.799	46.923	3.6538	.001073
12.80	106.795	53.127	3.8215	.000784
13.00	118.087	59.894	3.9955	.000506
13.20	130.792	67.258	4.1762	.000235
13.40	145.033	75.255	4.3635	-.000030
13.60	160.939	83.922	4.5578	-.000291
13.80	178.649	93.299	4.7592	-.000549
14.00	198.309	103.428	4.9679	-.000805
14.20	220.073	114.352	5.1842	-.001061
14.40	244.106	126.118	5.4082	-.001316
14.60	270.580	138.775	5.6403	-.001572
14.80	299.678	152.374	5.8808	-.001830
15.00	331.596	166.971	6.1298	-.002090
15.20	366.537	182.622	6.3877	-.002353
15.40	404.719	199.389	6.6549	-.002620
15.60	446.371	217.336	6.9317	-.002890
15.80	491.737	236.532	7.2185	-.003166
16.00	541.072	257.050	7.5156	-.003447
16.20	594.650	278.966	7.8234	-.003734
16.40	652.757	302.361	8.1425	-.004028
16.60	715.699	327.322	8.4733	-.004330

Table 21. Continued.

THE ISOTHERM AT 305.33 DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
.40	9.450	21.930	.0358	-.000012
.80	17.570	18.712	.0769	-.000054
1.20	24.454	15.751	.1231	-.000133
1.60	30.207	13.055	.1742	-.000254
2.00	34.933	10.622	.2299	-.000428
2.40	38.740	8.455	.2900	-.000667
2.80	41.733	6.559	.3538	-.000992
3.20	44.023	4.933	.4210	-.001437
3.60	45.715	3.573	.4911	-.002062
4.00	46.915	2.468	.5634	-.002973
4.40	47.722	1.602	.6376	-.004375
4.80	48.226	.955	.7130	-.006705
5.20	48.512	.502	.7890	-.011016
5.60	48.650	.215	.8650	-.020399
6.00	48.702	.063	.9397	-.047343
6.40	48.713	.007	1.0110	-.191326
6.80	48.714	.000	1.0675	.000000
7.20	48.715	.008	1.1255	.266753
7.60	48.728	.072	1.2077	.069545
8.00	48.790	.269	1.3048	.032309
8.40	48.972	.688	1.4164	.019014
8.80	49.384	1.435	1.5428	.012729
9.20	50.179	2.623	1.6849	.009224
9.60	51.558	4.380	1.8435	.007032
10.00	53.776	6.839	2.0196	.005535
10.40	57.143	10.150	2.2143	.004434
10.80	62.031	14.469	2.4284	.003570
11.20	68.876	19.967	2.6630	.002854
11.60	78.186	26.828	2.9189	.002231
12.00	90.546	35.250	3.1973	.001667
12.40	106.623	45.449	3.4990	.001142
12.80	127.174	57.661	3.8253	.000640
13.20	153.054	72.142	4.1772	.000152
13.60	185.228	89.175	4.5561	-.000330
14.00	224.776	109.072	4.9636	-.000810
14.40	272.913	132.178	5.4013	-.001294
14.80	330.997	158.877	5.8711	-.001785
15.20	400.551	189.599	6.3754	-.002288
15.60	483.277	224.824	6.9165	-.002807
16.00	581.082	265.089	7.4975	-.003347
16.40	696.100	310.997	8.1214	-.003913

Table 21. Continued.

THE ISOTHERM AT 310.00 DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
.40	9.617	22.378	.0358	-.000012
.80	17.929	19.220	.0766	-.000051
1.20	25.028	16.317	.1225	-.000122
1.60	31.017	13.675	.1730	-.000230
2.00	36.002	11.293	.2281	-.000379
2.40	40.087	9.172	.2871	-.000573
2.80	43.376	7.316	.3496	-.000816
3.20	45.975	5.723	.4151	-.001112
3.60	47.989	4.390	.4830	-.001457
4.00	49.519	3.304	.5527	-.001835
4.40	50.663	2.449	.6235	-.002207
4.80	51.507	1.805	.6949	-.002495
5.20	52.132	1.349	.7666	-.002587
5.60	52.608	1.057	.8388	-.002379
6.00	52.997	.906	.9122	-.001833
6.40	53.348	.866	.9880	-.001007
6.80	53.699	1.260	1.0674	-.000006
7.20	54.071	.972	1.1518	.001096
7.60	54.488	1.134	1.2427	.002217
8.00	55.000	1.461	1.3419	.003208
8.40	55.691	2.039	1.4520	.003969
8.80	56.678	2.963	1.5750	.004245
9.20	58.122	4.344	1.7132	.004251
9.60	60.230	6.304	1.8679	.004024
10.00	63.260	8.979	2.0405	.003662
10.40	67.527	12.514	2.2319	.003235
10.80	73.407	17.069	2.4431	.002784
11.20	81.341	22.813	2.6750	.002328
11.60	91.840	29.930	2.9285	.001874
12.00	105.494	38.620	3.2045	.001424
12.40	122.975	49.100	3.5040	.000978
12.80	145.044	61.605	3.8280	.000533
13.20	172.563	76.393	4.1777	.000087
13.60	206.501	93.750	4.5545	-.000361
14.00	247.947	113.989	4.9598	-.000815
14.40	298.123	137.456	5.3953	-.001277
14.80	358.396	164.545	5.8629	-.001750
15.20	430.299	195.683	6.3648	-.002237
15.60	515.547	231.354	6.9036	-.002741
16.00	616.059	272.101	7.4820	-.003267
16.40	733.985	318.530	8.1033	-.003819

Table 21. Continued.

THE ISOTHERM AT 320.00 DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
.40	9.975	23.383	.0357	-.000010
.80	18.693	20.298	.0762	-.000044
1.20	26.246	17.513	.1213	-.000104
1.60	32.737	14.982	.1710	-.000190
2.00	38.265	12.701	.2247	-.000303
2.40	42.931	10.670	.2821	-.000440
2.80	46.835	8.891	.3427	-.000595
3.20	50.078	7.362	.4060	-.000759
3.60	52.758	6.078	.4716	-.000918
4.00	54.972	5.030	.5390	-.001053
4.40	56.811	4.204	.6078	-.001140
4.80	58.363	3.586	.6784	-.001158
5.20	59.706	3.160	.7505	-.001091
5.60	60.915	2.912	.8247	-.000932
6.00	62.057	2.926	.9016	-.000690
6.40	63.194	2.878	.9822	-.000379
6.80	64.373	3.958	1.0673	-.000018
7.20	65.626	3.249	1.1580	.000380
7.60	66.989	3.593	1.2553	.000797
8.00	68.528	4.148	1.3607	.001207
8.40	70.347	5.002	1.4758	.001577
8.80	72.583	6.252	1.6023	.001874
9.20	75.415	8.004	1.7421	.002074
9.60	79.069	10.376	1.8969	.002166
10.00	83.816	13.495	2.0682	.002155
10.40	89.984	17.505	2.2575	.002052
10.80	97.959	22.560	2.4658	.001874
11.20	108.194	28.829	2.6945	.001639
11.60	121.209	36.496	2.9444	.001359
12.00	137.603	45.759	3.2167	.001046
12.40	158.058	56.838	3.5123	.000707
12.80	183.347	69.970	3.8323	.000347
13.20	214.343	85.416	4.1780	-.000030
13.60	252.027	103.465	4.5506	-.000423
14.00	297.564	124.436	4.9516	-.000829
14.40	352.012	148.681	5.3826	-.001251
14.80	416.988	176.596	5.8457	-.001688
15.20	493.837	208.620	6.3429	-.002142
15.60	584.447	245.244	6.8768	-.002617
16.00	690.718	287.018	7.4501	-.003114

Table 21. Continued.

THE ISOTHERM AT 330.00 DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
.40	10.331	24.283	.0356	-.000009
.80	19.452	21.364	.0758	-.000039
1.20	27.455	18.691	.1204	-.000090
1.60	34.438	16.264	.1692	-.000161
2.00	40.498	14.077	.2219	-.000251
2.40	45.732	12.131	.2781	-.000356
2.80	50.235	10.425	.3374	-.000468
3.20	54.103	8.958	.3994	-.000579
3.60	57.432	7.727	.4637	-.000677
4.00	60.315	6.724	.5302	-.000751
4.40	62.841	5.942	.5986	-.000788
4.80	65.097	5.370	.6690	-.000780
5.20	67.164	4.999	.7417	-.000720
5.60	69.122	4.820	.8172	-.000610
6.00	71.044	4.820	.8961	-.000452
6.40	72.999	4.981	.9791	-.000256
6.80	75.045	6.655	1.0671	-.000028
7.20	77.221	5.636	1.1619	.000221
7.60	79.575	6.165	1.2615	.000485
8.00	82.186	6.939	1.3701	.000748
8.40	85.171	8.052	1.4882	.000996
8.80	88.686	9.603	1.6173	.001209
9.20	92.926	11.698	1.7589	.001372
9.60	98.132	14.453	1.9147	.001474
10.00	104.593	17.993	2.0862	.001508
10.40	112.650	22.457	2.2748	.001474
10.80	122.702	27.997	2.4819	.001378
11.20	135.213	34.779	2.7087	.001225
11.60	150.715	42.985	2.9562	.001023
12.00	169.818	52.816	3.2258	.000781
12.40	193.213	64.488	3.5183	.000506
12.80	221.686	78.242	3.8351	.000202
13.20	256.120	94.342	4.1772	-.000127
13.60	297.511	113.080	4.5461	-.000476
14.00	346.978	134.779	4.9432	-.000844
14.40	405.776	159.797	5.3702	-.001232
14.80	475.312	188.536	5.8291	-.001638
15.20	557.160	221.441	6.3219	-.002063
15.60	653.087	259.012	6.8512	-.002511

Table 21. Continued.

THE ISOTHERM AT 340.00 DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
.40	10.686	25.228	.0355	-.000008
.80	20.208	22.420	.0754	-.000034
1.20	28.654	19.853	.1195	-.000078
1.60	36.122	17.525	.1677	-.000139
2.00	42.715	15.429	.2196	-.000213
2.40	48.496	13.564	.2749	-.000297
2.80	53.587	11.930	.3332	-.000384
3.20	58.071	10.526	.3942	-.000467
3.60	62.039	9.352	.4577	-.000536
4.00	65.582	8.404	.5236	-.000585
4.40	68.791	7.676	.5917	-.000606
4.80	71.751	7.162	.6622	-.000594
5.20	74.549	6.860	.7355	-.000545
5.60	77.266	6.762	.8119	-.000462
6.00	79.985	6.861	.8922	-.000346
6.40	82.779	7.138	.9769	-.000203
6.80	85.714	9.351	1.0668	-.000038
7.20	88.840	8.090	1.1627	.000144
7.60	92.211	8.805	1.2655	.000335
8.00	95.920	9.796	1.3764	.000528
8.40	100.098	11.161	1.4966	.000712
8.80	104.913	13.072	1.6275	.000874
9.20	110.577	15.425	1.7706	.001004
9.60	117.346	18.546	1.9274	.001092
10.00	125.524	22.489	2.0993	.001131
10.40	135.465	27.391	2.2877	.001119
10.80	147.584	33.401	2.4940	.001054
11.20	162.356	40.683	2.7194	.000941
11.60	180.324	49.419	2.9652	.000782
12.00	202.111	59.807	3.2325	.000583
12.40	228.419	72.065	3.5226	.000349
12.80	260.044	86.435	3.8365	.000085
13.20	297.884	103.183	4.1755	-.000207
13.60	342.947	122.605	4.5411	-.000522
14.00	396.368	145.027	4.9347	-.000859
14.40	459.417	170.814	5.3580	-.001218
14.80	533.521	200.371	5.8129	-.001596
15.20	620.278	234.153	6.3016	-.001997
15.60	721.474	272.665	6.8265	-.002420

Table 21. Continued.

THE ISOTHERM AT 360.00 DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
.40	11.394	27.105	.0353	-.000007
.80	21.709	24.507	.0748	-.000027
1.20	31.031	22.139	.1182	-.000061
1.60	39.451	19.998	.1653	-.000107
2.00	47.058	18.075	.2159	-.000161
2.40	53.940	16.369	.2698	-.000220
2.80	60.182	14.879	.3267	-.000279
3.20	65.872	13.609	.3864	-.000332
3.60	71.099	12.561	.4488	-.000376
4.00	75.951	11.737	.5139	-.000404
4.40	80.518	11.139	.5817	-.000414
4.80	84.892	10.768	.6525	-.000404
5.20	89.164	10.627	.7266	-.000371
5.60	93.425	10.716	.8043	-.000318
6.00	97.767	11.033	.8864	-.000245
6.40	102.279	11.563	.9733	-.000156
6.80	107.041	14.739	1.0658	-.000053
7.20	112.115	13.130	1.1646	.000060
7.60	117.576	14.221	1.2705	.000180
8.00	123.536	15.644	1.3844	.000300
8.40	130.149	17.503	1.5075	.000416
8.80	137.610	19.904	1.6411	.000520
9.20	146.159	22.957	1.7863	.000605
9.60	156.079	26.779	1.9445	.000665
10.00	167.701	31.492	2.1171	.000694
10.40	181.409	37.232	2.3053	.000689
10.80	197.643	44.146	2.5106	.000648
11.20	216.904	52.394	2.7342	.000569
11.60	239.760	62.157	2.9773	.000454
12.00	266.858	73.632	3.2412	.000303
12.40	298.923	87.038	3.5271	.000121
12.80	336.778	102.619	3.8363	-.000092
13.20	381.344	120.645	4.1701	-.000332
13.60	433.659	141.416	4.5299	-.000597
14.00	494.888	165.269	4.9172	-.000886
14.40	566.335	192.577	5.3338	-.001198
14.80	649.465	223.756	5.7817	-.001532
15.20	745.918	259.274	6.2628	-.001889

Table 21. Continued.

THE ISOTHERM AT 380.00 DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
.40	12.100	28.969	.0352	-.000006
.80	23.200	26.566	.0743	-.000022
1.20	33.382	24.385	.1171	-.000050
1.60	42.736	22.420	.1634	-.000085
2.00	51.346	20.664	.2130	-.000127
2.40	59.295	19.113	.2659	-.000171
2.80	66.664	17.770	.3218	-.000215
3.20	73.539	16.641	.3806	-.000254
3.60	80.006	15.732	.4423	-.000285
4.00	86.155	15.050	.5069	-.000305
4.40	92.077	14.602	.5745	-.000313
4.80	97.869	14.396	.6455	-.000305
5.20	103.627	14.438	.7201	-.000283
5.60	109.453	14.735	.7988	-.000246
6.00	115.450	15.288	.8820	-.000197
6.40	121.717	16.086	.9705	-.000135
6.80	128.346	20.119	1.0647	-.000065
7.20	135.415	18.289	1.1653	.000013
7.60	143.014	19.760	1.2731	.000094
8.00	151.274	21.614	1.3891	.000177
8.40	160.370	23.958	1.5141	.000256
8.80	170.521	26.904	1.6494	.000326
9.20	181.989	30.564	1.7960	.000384
9.60	195.083	35.057	1.9552	.000424
10.00	210.162	40.508	2.1282	.000441
10.40	227.635	47.049	2.3164	.000434
10.80	247.966	54.829	2.5209	.000398
11.20	271.684	64.006	2.7431	.000333
11.60	299.382	74.760	2.9841	.000239
12.00	331.729	87.289	3.2453	.000115
12.40	369.478	101.811	3.5279	-.000038
12.80	413.476	118.574	3.8331	-.000218
13.20	464.673	137.851	4.1625	-.000423
13.60	524.133	159.949	4.5173	-.000653
14.00	593.054	185.210	4.8993	-.000907
14.40	672.774	214.016	5.3100	-.001183

Table 21. Continued.

THE ISOTHERM AT 40..0 DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
.40	12.803	30.822	.0351	-.000005
.80	24.681	28.602	.0739	-.000019
1.20	35.714	26.596	.1162	-.000041
1.60	45.988	24.803	.1618	-.000070
2.00	55.583	23.206	.2108	-.000103
2.40	64.581	21.812	.2628	-.000138
2.80	73.060	20.618	.3179	-.000172
3.20	81.104	19.636	.3760	-.000203
3.60	88.798	18.876	.4372	-.000227
4.00	96.236	18.349	.5014	-.000243
4.40	103.510	18.066	.5690	-.000249
4.80	110.722	18.038	.6400	-.000245
5.20	117.977	18.279	.7150	-.000229
5.60	125.383	18.799	.7943	-.000204
6.00	133.053	19.611	.8784	-.000168
6.40	141.100	20.676	.9679	-.000124
6.80	149.626	25.490	1.0633	-.000074
7.20	158.721	23.529	1.1652	-.000019
7.60	168.492	25.383	1.2744	.000040
8.00	179.085	27.666	1.3918	.000098
8.40	190.696	30.489	1.5181	.000153
8.80	203.564	33.969	1.6546	.000202
9.20	217.974	38.221	1.8021	.000241
9.60	234.260	43.365	1.9620	.000267
10.00	252.802	49.529	2.1353	.000275
10.40	274.036	56.845	2.3232	.000263
10.80	298.452	65.461	2.5271	.000229
11.20	326.600	75.538	2.7480	.000171
11.60	359.100	87.253	2.9873	.000088
12.00	396.648	100.806	3.2462	-.000020
12.40	440.120	116.417	3.5259	-.000153
12.80	490.089	134.336	3.8278	-.000310
13.20	547.833	154.839	4.1533	-.000491
13.60	614.346	178.239	4.5038	-.000695
14.00	690.857	204.884	4.8810	-.000922

Table 21. Continued.

THE ISOTHERM AT 420.00 DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
.40	13.505	32.666	.0350	-.000004
.80	26.155	30.620	.0735	-.000016
1.20	38.030	28.786	.1154	-.000034
1.60	49.211	27.155	.1606	-.000058
2.00	59.779	25.718	.2089	-.000085
2.40	69.811	24.475	.2603	-.000114
2.80	79.386	23.434	.3148	-.000142
3.20	88.586	22.604	.3724	-.000166
3.60	97.500	22.000	.4331	-.000186
4.00	106.219	21.636	.4970	-.000200
4.40	114.842	21.528	.5644	-.000206
4.80	123.477	21.691	.6356	-.000204
5.20	132.233	22.142	.7108	-.000193
5.60	141.230	22.893	.7905	-.000175
6.00	150.589	23.953	.8752	-.000150
6.40	160.433	25.314	.9655	-.000118
6.80	170.876	30.849	1.0617	-.000081
7.20	182.020	28.827	1.1646	-.000041
7.60	193.985	31.066	1.2748	.000001
8.00	206.936	33.776	1.3931	.000043
8.40	221.084	37.074	1.5204	.000083
8.80	236.689	41.079	1.6577	.000117
9.20	254.058	45.911	1.8059	.000142
9.60	273.545	51.691	1.9661	.000157
10.00	295.554	58.548	2.1395	.000157
10.40	320.545	66.618	2.3272	.000142
10.80	349.030	76.048	2.5304	.000108
11.20	381.586	86.999	2.7502	.000053
11.60	418.856	99.651	2.9879	-.000022
12.00	461.560	114.203	3.2447	-.000119
12.40	510.501	130.878	3.5219	-.000238
12.80	566.578	149.928	3.8209	-.000379
13.20	630.797	171.634	4.1430	-.000542
13.60	704.282	196.313	4.4896	-.000726

Table 21. Continued.

THE ISOTHERM AT 450.10 DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
.40	14.554	35.416	.0349	-.000003
.80	28.355	33.620	.0731	-.000013
1.20	41.478	32.028	.1145	-.000027
1.60	54.004	30.634	.1590	-.000046
2.00	66.010	29.430	.2066	-.000067
2.40	77.573	28.419	.2573	-.000089
2.80	88.772	27.608	.3111	-.000110
3.20	99.689	27.014	.3680	-.000129
3.60	110.415	26.655	.4281	-.000145
4.00	121.046	26.548	.4917	-.000156
4.40	131.690	26.717	.5590	-.000162
4.80	142.459	27.181	.6301	-.000163
5.20	153.477	27.961	.7056	-.000158
5.60	164.872	29.075	.7857	-.000147
6.00	176.782	30.534	.8710	-.000132
6.40	189.345	32.353	.9620	-.000112
6.80	202.690	34.866	1.0592	-.000089
7.20	216.936	36.849	1.1630	-.000064
7.60	232.224	39.666	1.2742	-.000038
8.00	248.748	43.015	1.3935	-.000013
8.40	266.723	47.018	1.5218	.000010
8.80	286.458	51.799	1.6598	.000029
9.20	308.282	57.482	1.8085	.000041
9.60	332.581	64.193	1.9690	.000044
10.00	359.791	72.063	2.1423	.000036
10.40	390.404	81.231	2.3294	.000016
10.80	424.969	91.845	2.5316	-.000019
11.20	464.095	104.071	2.7498	-.000070
11.60	508.464	118.087	2.9854	-.000138
12.00	558.830	134.097	3.2395	-.000224
12.40	616.037	152.328	3.5134	-.000329
12.80	681.023	173.054	3.8083	-.000452

Table 21. Continued.

THE ISOTHERM AT 500.00 DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
.40	16.297	39.970	.0348	-.000002
.80	31.997	38.560	.0726	-.000009
1.20	47.172	37.351	.1134	-.000019
1.60	61.903	36.337	.1571	-.000032
2.00	76.267	35.513	.2038	-.000047
2.40	90.340	34.885	.2536	-.000063
2.80	104.203	34.467	.3064	-.000078
3.20	117.944	34.279	.3625	-.000092
3.60	131.660	34.345	.4220	-.000104
4.00	145.458	34.692	.4851	-.000113
4.40	159.455	35.348	.5520	-.000119
4.80	173.781	36.339	.6231	-.000123
5.20	188.575	37.695	.6987	-.000123
5.60	203.988	39.437	.7791	-.000119
6.00	220.179	41.583	.8650	-.000114
6.40	237.308	44.130	.9566	-.000106
6.80	255.532	52.159	1.0545	-.000097
7.20	274.995	50.338	1.1592	-.000087
7.60	295.868	54.120	1.2713	-.000076
8.00	318.374	58.525	1.3914	-.000067
8.40	342.789	63.686	1.5203	-.000060
8.80	369.442	69.734	1.6588	-.000057
9.20	398.712	76.798	1.8078	-.000059
9.60	431.034	85.013	1.9682	-.000067
10.00	466.894	94.515	2.1408	-.000083
10.40	506.836	105.446	2.3268	-.000109
10.80	551.462	117.961	2.5271	-.000145
11.20	601.439	132.229	2.7429	-.000193
11.60	657.504	148.435	2.9753	-.000254
12.00	720.473	166.787	3.2254	-.000329

Table 21. Continued.

THE ISOTHERM AT 55.... DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
.40	18.034	44.434	.0347	-.000002
.80	35.616	43.446	.0722	-.000007
1.20	52.818	42.598	.1125	-.000014
1.60	69.721	41.950	.1557	-.000024
2.00	86.464	41.499	.2018	-.000035
2.40	102.948	41.254	.2509	-.000047
2.80	119.437	41.233	.3031	-.000059
3.20	135.967	41.461	.3586	-.000070
3.60	152.643	41.965	.4175	-.000079
4.00	169.583	42.787	.4801	-.000088
4.40	186.918	43.949	.5467	-.000094
4.80	204.793	45.489	.6176	-.000099
5.20	223.365	47.440	.6931	-.000102
5.60	242.803	49.829	.7736	-.000103
6.00	263.289	52.677	.8596	-.000103
6.40	285.006	55.984	.9514	-.000102
6.80	308.134	65.363	1.0495	-.000100
7.20	332.840	63.895	1.1545	-.000098
7.60	359.326	68.636	1.2669	-.000097
8.00	387.645	74.091	1.3872	-.000097
8.40	418.711	80.392	1.5162	-.000099
8.80	452.290	87.678	1.6547	-.000104
9.20	489.064	96.089	1.8034	-.000114
9.60	529.329	105.761	1.9631	-.000128
10.00	573.8..	116.839	2.1349	-.000149
10.40	623.008	129.475	2.3195	-.000177
10.80	677.615	143.815	2.5180	-.000214
11.20	738.311	160.047	2.7314	-.000260

THE ISOTHERM AT 60..... DEG. K

MOL/L	P,BAR	DP/DD	DP/DT	D2P/DT2
.40	19.767	48.997	.0346	-.000001
.80	39.218	48.290	.0719	-.000005
1.20	58.427	47.791	.1119	-.000011
1.60	77.478	47.498	.1546	-.000019
2.00	96.453	47.413	.2002	-.000028
2.40	115.437	47.548	.2488	-.000037
2.80	134.524	47.926	.3005	-.000046
3.20	153.815	48.577	.3555	-.000055
3.60	173.426	49.534	.4139	-.000064
4.00	193.487	50.834	.4762	-.000072
4.40	214.144	52.515	.5424	-.000078
4.80	235.556	54.616	.6130	-.000084
5.20	257.898	57.173	.6883	-.000088
5.60	281.359	60.219	.7687	-.000092
6.00	306.141	63.777	.8546	-.000095
6.40	332.450	67.849	.9464	-.000098
6.80	360.486	78.474	1.0445	-.000101
7.20	390.441	77.464	1.1495	-.000104
7.60	422.543	83.164	1.2617	-.000108
8.00	457.077	89.653	1.3819	-.000113
8.40	494.389	97.077	1.5107	-.000121
8.80	534.882	105.580	1.6488	-.000131
9.20	579.017	115.306	1.7969	-.000145
9.60	627.310	126.401	1.9558	-.000163
10.00	680.339	139.011	2.1264	-.000186
10.40	738.742	153.293	2.3096	-.000216

Table 22. The Joule-Thomson inversion locus.

T,K	P,BAR	MOL/L	T,K	P,BAR	MOL/L
0	0.0	0.00	425	465.6	11.89
250	27.5	15.05	430	472.3	11.81
255	48.3	14.95	435	478.8	11.74
260	68.4	14.85	440	485.1	11.66
265	87.9	14.76	445	491.2	11.58
270	106.6	14.66	450	497.1	11.50
275	124.7	14.56	455	502.8	11.42
280	142.3	14.46	460	508.3	11.35
285	159.2	14.37	465	513.6	11.27
290	175.6	14.27	470	518.7	11.20
295	191.4	14.17	475	523.7	11.12
300	206.7	14.08	480	528.4	11.05
305	221.5	13.98	485	533.0	10.97
310	235.8	13.89	490	537.5	10.90
315	249.7	13.80	495	541.7	10.82
320	263.1	13.70	500	545.8	10.75
325	276.1	13.61	505	549.7	10.68
330	288.6	13.52	510	553.5	10.61
335	300.8	13.43	515	557.1	10.53
340	312.6	13.34	520	560.5	10.46
345	324.0	13.25	525	563.8	10.39
350	335.1	13.16	530	566.9	10.32
355	345.8	13.07	535	569.9	10.25
360	356.2	12.98	540	572.7	10.18
365	366.3	12.89	545	575.3	10.10
370	376.0	12.81	550	577.8	10.03
375	385.5	12.72	555	580.1	9.96
380	394.7	12.64	560	582.3	9.89
385	403.6	12.55	565	584.4	9.82
390	412.2	12.47	570	586.3	9.75
395	420.5	12.38	575	588.0	9.68
400	428.6	12.30	580	589.6	9.61
405	436.5	12.22	585	591.1	9.54
410	444.1	12.14	590	592.4	9.47
415	451.5	12.06	595	593.6	9.40
420	458.6	11.97	600	594.6	9.33

Table 23. Thermophysical properties of the saturated liquid.

This table was computed along paths described in section 3.0. Column headings have the following interpretations--

DPS/DT	$\equiv$	dP_σ/dT, vapor pressure,
DDL/DT	$\equiv$	$d\rho_\ell/dT$, saturated liquid,
DP/DT	$\equiv$	$(\partial P/\partial T)$, single phase,
DP/DD	$\equiv$	$(\partial P/\partial \rho)$, single phase,
Q,VAP	$\equiv$	ΔH_{vap}, heat of vaporization,
CV	$\equiv$	$C_v(\rho,T)$,
CS	$\equiv$	$C_\sigma(T)$
CP	$\equiv$	$C_p(\rho,T)$
W	$\equiv$	speed of sound

Table 23. Thermophysical properties of the saturated liquid.

T DEG K	P BAR	DEN MOL/L	V,LIQ L/MOL	V,GAS L/MOL	DPS/DT BAR/K	DDL/DT MOL/L/K	DP/DT BAR/K	DP/DD BAR-L/MOL	Q,VAP J/MOL	Q,XPT J/MOL
90.348	.1131E-04	21.680	.04613	.6599E+06	.299E-05	-.0364	30.9729	.851E+03	17820	17498
95.000	.3622E-04	21.511	.04649	.2171E+06	.858E-05	-.0364	29.6796	.815E+03	17696	17411
100.000	.1110E-03	21.328	.04689	.7471E+05	.235E-04	-.0365	28.3262	.776E+03	17553	17311
105.000	.3027E-03	21.146	.04729	.2880E+05	.575E-04	-.0366	27.0197	.739E+03	17402	17205
110.000	.7467E-03	20.963	.04770	.1224E+05	.128E-03	-.0367	25.7651	.703E+03	17246	17093
115.000	.1689E-02	20.779	.04813	.5659E+04	.263E-03	-.0368	24.5647	.668E+03	17086	16976
120.000	.3545E-02	20.595	.04856	.2815E+04	.501E-03	-.0369	23.4186	.634E+03	16924	16852
125.000	.6964E-02	20.410	.04900	.1492E+04	.899E-03	-.0371	22.3260	.602E+03	16761	16722
130.000	.1291E-01	20.224	.04945	.8367E+03	.153E-02	-.0373	21.2853	.571E+03	16597	16586
135.000	.2275E-01	20.037	.04991	.4928E+03	.247E-02	-.0375	20.2944	.541E+03	16432	16445
140.000	.3831E-01	19.849	.05038	.3031E+03	.383E-02	-.0378	19.3508	.512E+03	16266	16297
145.000	.6198E-01	19.659	.05087	.1938E+03	.573E-02	-.0380	18.4520	.485E+03	16099	16143
150.000	.9672E-01	19.469	.05136	.1282E+03	.829E-02	-.0383	17.5955	.459E+03	15931	15982
155.000	.1462E+00	19.276	.05188	.8746E+02	.116E-01	-.0387	16.7788	.433E+03	15761	15816
160.000	.2146E+00	19.082	.05241	.6131E+02	.159E-01	-.0391	15.9994	.409E+03	15589	15643
165.000	.3070E+00	18.885	.05295	.4404E+02	.212E-01	-.0395	15.2550	.386E+03	15415	15464
170.000	.4290E+00	18.687	.05351	.3234E+02	.278E-01	-.0400	14.5431	.363E+03	15237	15278
175.000	.5868E+00	18.485	.05410	.2422E+02	.356E-01	-.0405	13.8618	.341E+03	15055	15085
180.000	.7874E+00	18.282	.05470	.1846E+02	.449E-01	-.0411	13.2089	.321E+03	14869	14885
185.000	.1038E+01	18.075	.05533	.1430E+02	.557E-01	-.0417	12.5825	.300E+03	14677	14678
190.000	.1347E+01	17.865	.05598	.1124E+02	.682E-01	-.0424	11.9807	.281E+03	14478	14464
195.000	.1723E+01	17.651	.05665	.8944E+01	.824E-01	-.0431	11.4019	.262E+03	14272	14241
200.000	.2174E+01	17.433	.05736	.7203E+01	.984E-01	-.0440	10.8443	.244E+03	14058	14011
205.000	.2710E+01	17.211	.05810	.5863E+01	.116E+00	-.0449	10.3065	.227E+03	13834	13772
210.000	.3340E+01	16.984	.05888	.4818E+01	.136E+00	-.0460	9.7870	.210E+03	13599	13524
215.000	.4074E+01	16.751	.05970	.3993E+01	.158E+00	-.0471	9.2844	.194E+03	13353	13266
220.000	.4922E+01	16.512	.06056	.3334E+01	.182E+00	-.0484	8.7974	.178E+03	13094	12997
225.000	.5895E+01	16.267	.06147	.2804E+01	.208E+00	-.0498	8.3247	.163E+03	12821	12717
230.000	.7004E+01	16.014	.06244	.2372E+01	.236E+00	-.0514	7.8651	.149E+03	12533	12424
235.000	.8259E+01	15.753	.06348	.2017E+01	.266E+00	-.0531	7.4175	.135E+03	12227	12118
240.000	.9670E+01	15.483	.06459	.1724E+01	.299E+00	-.0552	6.9807	.121E+03	11902	11797
245.000	.1125E+02	15.201	.06578	.1479E+01	.334E+00	-.0575	6.5537	.108E+03	11556	11458
250.000	.1301E+02	14.908	.06708	.1273E+01	.371E+00	-.0601	6.1352	.959E+02	11186	11099
255.000	.1496E+02	14.600	.06850	.1099E+01	.411E+00	-.0632	5.7241	.841E+02	10791	10718
260.000	.1712E+02	14.275	.07005	.9507E+00	.453E+00	-.0668	5.3193	.729E+02	10365	10311
265.000	.1950E+02	13.930	.07179	.8232E+00	.497E+00	-.0711	4.9194	.622E+02	9905	9872
270.000	.2210E+02	13.562	.07374	.7129E+00	.545E+00	-.0764	4.5230	.520E+02	9406	9395
275.000	.2495E+02	13.164	.07597	.6168E+00	.596E+00	-.0831	4.1282	.425E+02	8857	8871
280.000	.2806E+02	12.728	.07857	.5322E+00	.650E+00	-.0918	3.7329	.336E+02	8249	8286
285.000	.3145E+02	12.240	.08170	.4569E+00	.707E+00	-.1038	3.3335	.253E+02	7561	7619
290.000	.3514E+02	11.680	.08561	.3887E+00	.770E+00	-.1216	2.9249	.177E+02	6763	6834
295.000	.3916E+02	11.003	.09088	.3252E+00	.838E+00	-.1524	2.4965	.109E+02	5793	5864
300.000	.4354E+02	10.093	.09908	.2623E+00	.917E+00	-.2246	2.0213	.492E+01	4487	4532
305.000	.4837E+02	8.047	.12426	.1767E+00	.103E+01	-1.2833	1.3014	.212E+00	1647	1591
305.330	.4871E+02	6.800	.14706	.1471E+00	.107E+01	0.0000	1.0675	0.	0	0

Table 23. Continued.

PROPERTIES OF SATURATED LIQUID ETHANE

T DEG K	P BAR	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CS J/MOL/K	CP J/MOL/K	W M/SEC	CS,XPT J/MOL/K
90.348	.1131E-04	5317.5	5317.5	76.986	46.30	67.96	67.96	2038	67.96
95.000	.3622E-04	5634.4	5634.4	80.404	46.01	68.20	68.20	2004	68.20
100.000	.1110E-03	5975.9	5975.9	83.907	45.68	68.39	68.39	1966	68.39
105.000	.3027E-03	6318.1	6318.1	87.248	45.34	68.54	68.54	1927	68.54
110.000	.7467E-03	6661.1	6661.1	90.439	45.03	68.67	68.67	1888	68.67
115.000	.1689E-02	7004.8	7004.8	93.495	44.73	68.79	68.79	1848	68.79
120.000	.3545E-02	7349.1	7349.1	96.425	44.46	68.92	68.92	1808	68.92
125.000	.6964E-02	7694.0	7694.1	99.241	44.21	69.06	69.06	1768	69.06
130.000	.1291E-01	8039.8	8039.8	101.953	44.00	69.22	69.22	1728	69.22
135.000	.2275E-01	8386.4	8386.5	104.569	43.82	69.41	69.41	1688	69.41
140.000	.3831E-01	8733.9	8734.1	107.097	43.66	69.62	69.63	1648	69.62
145.000	.6198E-01	9082.6	9082.9	109.544	43.54	69.86	69.87	1608	69.86
150.000	.9672E-01	9432.6	9433.1	111.917	43.44	70.14	70.15	1569	70.14
155.000	.1462E+00	9784.0	9784.8	114.222	43.37	70.45	70.47	1530	70.45
160.000	.2146E+00	10137.1	10138.2	116.464	43.33	70.80	70.82	1491	70.80
165.000	.3070E+00	10492.0	10493.6	118.648	43.31	71.18	71.22	1452	71.18
170.000	.4290E+00	10848.9	10851.2	120.779	43.31	71.61	71.66	1413	71.61
175.000	.5868E+00	11208.0	11211.2	122.862	43.33	72.07	72.15	1375	72.07
180.000	.7874E+00	11569.6	11573.9	124.899	43.38	72.59	72.68	1336	72.59
185.000	.1038E+01	11933.9	11939.6	126.895	43.44	73.14	73.28	1298	73.14
190.000	.1347E+01	12301.0	12308.6	128.854	43.52	73.75	73.92	1260	73.75
195.000	.1723E+01	12671.3	12681.1	130.778	43.62	74.41	74.64	1221	74.41
200.000	.2174E+01	13045.0	13057.5	132.671	43.73	75.13	75.42	1183	75.13
205.000	.2710E+01	13422.4	13438.2	134.536	43.87	75.91	76.27	1145	75.91
210.000	.3340E+01	13803.8	13823.5	136.375	44.01	76.75	77.22	1106	76.75
215.000	.4074E+01	14189.5	14213.8	138.191	44.17	77.67	78.25	1068	77.67
220.000	.4922E+01	14579.9	14609.8	139.988	44.35	78.68	79.40	1029	78.68
225.000	.5895E+01	14975.5	15011.7	141.769	44.54	79.78	80.68	991	79.78
230.000	.7004E+01	15376.7	15420.4	143.535	44.75	80.98	82.10	951	80.98
235.000	.8259E+01	15784.1	15836.5	145.291	44.98	82.30	83.69	912	82.30
240.000	.9670E+01	16198.2	16260.7	147.038	45.22	83.77	85.50	872	83.77
245.000	.1125E+02	16619.9	16693.9	148.782	45.49	85.42	87.56	832	85.42
250.000	.1301E+02	17050.6	17137.3	150.526	45.78	87.26	89.93	791	87.26
255.000	.1496E+02	17489.4	17591.9	152.275	46.10	89.37	92.71	749	89.37
260.000	.1712E+02	17941.9	18061.8	154.042	47.09	92.43	96.65	705	91.80
265.000	.1950E+02	18407.7	18547.6	155.828	47.45	95.24	100.61	662	94.65
270.000	.2210E+02	18888.0	19050.9	157.639	47.86	98.61	105.57	617	98.06
275.000	.2495E+02	19385.8	19575.4	159.485	48.34	102.79	111.97	572	102.28
280.000	.2806E+02	19905.6	20126.1	161.383	48.90	108.13	120.61	524	107.67
285.000	.3145E+02	20454.6	20711.0	163.357	49.57	115.37	133.08	475	114.96
290.000	.3514E+02	21042.5	21343.4	165.449	50.40	126.03	153.04	422	125.64
295.000	.3916E+02	21693.9	22049.8	167.742	51.55	144.28	191.15	366	143.62
300.000	.4354E+02	22469.4	22900.8	170.463	53.55	187.27	298.25	301	184.47
305.000	.4837E+02	23856.0	24457.1	175.427	67.55	854.09	3833.59	199	711.76
305.330	.4871E+02	24580.0	25296.4	178.161	0.00	0.00	0.00	0	0.00

Table 24. Thermophysical properties along isobars*

The following pages give physical and thermodynamic properties along selected isobars, as computed by methods of section 3 of the text.

The first line of each table refers to freezing liquid on the P(T) melting line.

Each table at $P < P_c$ contains a blank line for the transition from saturated liquid to vapor, as seen by the abrupt decrease of density.

Table headings for partial derivatives have the following interpretations--

$$DP/DT \equiv \partial P/\partial T,$$
$$DP/DD \equiv \partial P/\partial \rho.$$

The specific heat interpretions are--

$$CV \equiv C_v(\rho,T),$$
$$CP \equiv C_p(\rho,T).$$

*These tables are extrapolated beyond the range of P-ρ-T data used for adjusting the equation of state ($P \sim 350$ bar).

Table 24. Thermophysical properties along isobars.

ETHANE ISOBAR AT P = .10000 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.350	21.680	.04613	30.9729	851.425	5317.6	5318.0	76.986	46.30	67.96	2038
100.000	21.329	.04689	28.3268	776.520	5975.8	5976.2	83.906	45.68	68.39	1966
110.000	20.963	.04770	25.7658	702.849	6661.0	6661.5	90.439	45.03	68.67	1888
120.000	20.595	.04856	23.4192	634.258	7348.9	7349.4	96.424	44.46	68.92	1808
130.000	20.224	.04945	21.2859	570.898	8039.7	8040.2	101.952	44.00	69.22	1728
140.000	19.849	.05038	19.3512	512.521	8733.8	8734.3	107.096	43.66	69.62	1648
150.000	19.469	.05136	17.5956	458.713	9432.6	9433.1	111.917	43.44	70.15	1569
150.390	19.454	.05140	17.5304	456.700	9459.9	9460.5	112.099	43.43	70.17	1566
150.390	.00804	124.308	.000572	12.350	24203.5	25446.6	218.176	30.44	38.95	229
160.000	.00755	132.382	.000631	13.166	24499.7	25823.5	220.605	31.04	39.51	236
170.000	.00710	140.769	.000593	14.012	24814.(	26221.7	223.019	31.70	40.14	242
180.000	.00670	149.145	.000559	14.855	25135.1	26626.5	225.333	32.41	40.83	249
190.000	.00635	157.512	.000529	15.697	25463.4	27038.5	227.561	33.17	41.58	255
200.000	.00603	165.872	.000502	16.537	25799.5	27458.2	229.713	33.97	42.37	261
210.000	.00574	174.226	.000478	17.377	26143.8	27886.0	231.800	34.82	43.21	267
220.000	.00548	182.575	.000456	18.215	26496.8	28322.5	233.831	35.72	44.10	273
230.000	.00524	190.921	.000436	19.052	26859.0	28768.2	235.812	36.67	45.04	278
240.000	.00502	199.263	.000418	19.889	27230.8	29223.4	237.749	37.66	46.02	284
250.000	.00482	207.602	.000401	20.726	27612.7	29688.7	239.649	38.69	47.05	289
260.000	.00463	215.939	.000385	21.562	28005.1	30164.5	241.515	39.76	48.12	294
270.000	.00446	224.274	.000371	22.397	28408.4	30651.1	243.351	40.87	49.22	299
280.000	.00430	232.607	.000358	23.232	28822.9	31149.0	245.162	42.01	50.36	304
290.000	.00415	240.939	.000345	24.067	29249.0	31658.4	246.949	43.19	51.53	309
300.000	.00401	249.269	.000334	24.901	29687.0	32179.7	248.716	44.39	52.73	313
310.000	.00388	257.598	.000323	25.736	30137.0	32713.0	250.465	45.61	53.95	318
320.000	.00376	265.925	.000313	26.570	30599.5	33258.7	252.198	46.85	55.19	322
330.000	.00365	274.252	.000303	27.404	31074.4	33816.9	253.915	48.12	56.45	326
340.000	.00354	282.578	.000294	28.237	31562.0	34387.8	255.619	49.39	57.73	331
350.000	.00344	290.903	.000286	29.071	32062.4	34971.5	257.311	50.68	59.01	335
360.000	.00334	299.227	.000278	29.904	32575.7	35568.0	258.992	51.97	60.30	339
370.000	.00325	307.551	.000270	30.738	33102.0	36177.5	260.662	53.27	61.60	343
380.000	.00317	315.874	.000263	31.571	33641.3	36800.0	262.322	54.57	62.90	347
390.000	.00308	324.197	.000257	32.404	34193.5	37435.5	263.973	55.87	64.20	351
400.000	.00301	332.519	.000250	33.237	34758.8	38084.0	265.614	57.17	65.50	355
410.000	.00293	340.840	.000244	34.070	35337.0	38745.4	267.248	58.47	66.79	359
420.000	.00286	349.162	.000238	34.902	35928.1	39419.7	268.873	59.75	68.08	363
430.000	.00280	357.482	.000233	35.735	36532.1	40106.9	270.490	61.03	69.36	367
440.000	.00273	365.803	.000227	36.568	37148.8	40806.8	272.099	62.31	70.63	371
450.000	.00267	374.123	.000222	37.400	37778.2	41519.4	273.700	63.57	71.89	375
460.000	.00261	382.443	.000217	38.233	38420.1	42244.6	275.294	64.82	73.14	378
470.000	.00256	390.762	.000213	39.066	39074.5	42982.1	276.880	66.05	74.38	382
480.000	.00251	399.082	.000208	39.898	39741.2	43732.0	278.459	67.28	75.60	386
490.000	.00245	407.401	.000204	40.730	40420.1	44494.1	280.030	68.49	76.81	389
500.000	.00241	415.720	.000200	41.563	41111.0	45268.2	281.594	69.69	78.01	393
520.000	.00231	432.357	.000192	43.227	42528.5	46852.1	284.700	72.05	80.37	400
540.000	.00223	448.993	.000185	44.892	43932.5	48482.4	287.776	74.35	82.67	407
560.000	.00215	465.628	.000179	46.556	45302.0	50158.3	290.823	76.59	84.91	414
580.000	.00207	482.263	.000172	48.220	47035.8	51878.4	293.841	78.78	87.10	421
600.000	.00200	498.898	.000167	49.884	48652.8	53641.8	296.830	80.92	89.24	427
620.000	.00194	515.532	.000161	51.548	50292.1	55447.4	299.790	83.00	91.32	434
640.000	.00188	532.166	.000156	53.212	51972.6	57294.2	302.722	85.04	93.36	440
660.000	.00182	548.799	.000152	54.876	53693.4	59181.3	305.625	87.03	95.35	447
680.000	.00177	565.432	.000147	56.540	55453.5	61107.8	308.501	88.98	97.29	453
700.000	.00172	582.064	.000143	58.204	57252.1	63072.7	311.349	90.88	99.19	459

Table 24. Continued.

ETHANE ISOBAR AT P = .50000 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.356	21.666	.04612	30.9732	851.532	5317.7	5320.0	76.988	46.30	67.96	2038
100.000	21.329	.04688	28.3291	776.689	5975.4	5977.8	83.903	45.68	68.39	1966
110.000	20.964	.04770	25.7682	703.027	6660.7	6663.0	90.435	45.03	68.67	1888
120.000	20.596	.04855	23.4218	634.441	7348.5	7351.0	96.421	44.46	68.92	1808
130.000	20.225	.04944	21.2886	571.085	8039.2	8041.7	101.949	44.00	69.22	1728
140.000	19.850	.05038	19.3540	512.711	8733.3	8735.8	107.092	43.66	69.62	1648
150.000	19.469	.05138	17.5985	458.906	9432.0	9434.5	111.913	43.44	70.15	1569
160.000	19.082	.05240	16.0016	409.220	10136.6	10139.2	116.461	43.33	70.82	1491
170.000	18.687	.05351	14.5437	363.208	10848.7	10851.4	120.779	43.31	71.66	1413
172.404	18.594	.05379	14.2119	352.648	11021.3	11024.0	121.787	43.32	71.89	1395
172.404	.03562	28.078	.003017	13.747	24845.9	26249.6	209.944	32.16	41.15	241
180.000	.03403	29.385	.002874	14.427	25094.9	26564.2	211.927	32.63	41.53	247
190.000	.03215	31.100	.002706	15.311	25427.4	26982.4	214.187	33.34	42.14	253
200.000	.03048	32.807	.002563	16.186	25766.9	27407.2	216.355	34.11	42.84	260
210.000	.02898	34.508	.002433	17.056	26114.0	27839.4	218.473	34.93	43.61	266
220.000	.02762	36.205	.002316	17.920	26469.4	28279.6	220.520	35.81	44.44	271
230.000	.02639	37.897	.002210	18.780	26833.6	28728.5	222.515	36.75	45.34	277
240.000	.02526	39.585	.002114	19.637	27207.3	29186.5	224.464	37.72	46.29	283
250.000	.02423	41.271	.002027	20.491	27590.7	29654.3	226.373	38.75	47.28	288
260.000	.02328	42.955	.001946	21.343	27984.6	30132.3	228.248	39.81	48.33	293
270.000	.02240	44.637	.001872	22.192	28389.1	30620.9	230.091	40.91	49.41	298
280.000	.02159	46.317	.001803	23.040	28804.8	31120.6	231.908	42.05	50.53	303
290.000	.02084	47.995	.001740	23.887	29231.9	31631.6	233.701	43.22	51.69	308
300.000	.02013	49.672	.001680	24.732	29670.8	32154.4	235.473	44.42	52.87	312
310.000	.01947	51.348	.001625	25.576	30121.7	32689.1	237.226	45.64	54.09	317
320.000	.01886	53.023	.001573	26.419	30584.9	33236.0	238.963	46.88	55.31	321
330.000	.01828	54.697	.001525	27.261	31060.5	33795.4	240.684	48.14	56.56	326
340.000	.01774	56.370	.001479	28.102	31548.8	34367.3	242.391	49.41	57.83	330
350.000	.01723	58.043	.001437	28.943	32049.8	34951.9	244.086	50.70	59.11	334
360.000	.01675	59.714	.001396	29.783	32563.7	35549.4	245.769	51.99	60.39	339
370.000	.01629	61.386	.001358	30.622	33090.5	36159.7	247.441	53.29	61.68	343
380.000	.01586	63.056	.001322	31.461	33630.2	36783.0	249.103	54.59	62.98	347
390.000	.01545	64.727	.001287	32.300	34182.9	37419.3	250.755	55.89	64.27	351
400.000	.01506	66.396	.001255	33.138	34748.8	38068.4	252.399	57.18	65.57	355
410.000	.01469	68.066	.001224	33.975	35327.2	38730.5	254.034	58.48	66.85	359
420.000	.01434	69.735	.001195	34.813	35918.7	39405.4	255.660	59.76	68.14	363
430.000	.01400	71.403	.001167	35.650	36523.0	40093.2	257.278	61.04	69.41	367
440.000	.01369	73.072	.001140	36.486	37140.1	40793.7	258.889	62.32	70.68	370
450.000	.01338	74.740	.001114	37.323	37769.8	41506.8	260.491	63.58	71.94	374
460.000	.01309	76.408	.001090	38.159	38412.0	42232.4	262.086	64.83	73.19	378
470.000	.01281	78.075	.001067	38.995	39066.7	42970.4	263.673	66.06	74.42	382
480.000	.01254	79.742	.001044	39.830	39733.6	43720.8	265.253	67.29	75.65	385
490.000	.01228	81.409	.001023	40.666	40412.8	44483.2	266.825	68.50	76.86	389
500.000	.01204	83.076	.001002	41.501	41103.9	45257.8	268.390	69.70	78.05	393
520.000	.01157	86.410	.000964	43.171	42521.9	46842.4	271.497	72.05	80.40	400
540.000	.01114	89.742	.000928	44.840	43986.3	48473.4	274.575	74.35	82.70	407
560.000	.01074	93.074	.000894	46.509	45496.1	50149.9	277.623	76.60	84.94	414
580.000	.01037	96.406	.000863	48.178	47050.3	51870.6	280.642	78.79	87.13	420
600.000	.01003	99.737	.000835	49.846	48647.6	53634.5	283.632	80.92	89.26	427
620.000	.00970	103.068	.000808	51.513	50287.2	55440.6	286.592	83.01	91.34	434
640.000	.00940	106.398	.000782	53.180	51968.0	57287.9	289.525	85.04	93.38	440
660.000	.00911	109.728	.000758	54.847	53689.0	59175.4	292.429	87.04	95.37	447
680.000	.00885	113.058	.000736	56.514	55449.4	61102.3	295.305	88.98	97.31	453
700.000	.00859	116.387	.000715	58.180	57248.1	63067.5	298.153	90.88	99.21	459

ETHANE ISOBAR AT P = 1.01325 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.364	21.681	.04612	30.9734	851.669	5317.9	5322.6	76.990	46.30	67.96	2038
100.000	21.330	.04688	28.3320	776.907	5975.0	5979.8	83.899	45.68	68.39	1966
110.000	20.964	.04770	25.7714	703.255	6660.2	6665.0	90.431	45.03	68.67	1888
120.000	20.597	.04855	23.4252	634.676	7348.0	7352.9	96.416	44.46	68.92	1808
130.000	20.226	.04944	21.2921	571.325	8038.6	8043.6	101.944	44.00	69.22	1728
140.000	19.851	.05038	19.3577	512.955	8732.6	8737.7	107.088	43.66	69.62	1649
150.000	19.471	.05136	17.6022	459.154	9431.2	9436.4	111.908	43.44	70.14	1570
160.000	19.084	.05240	16.0055	409.472	10135.7	10141.0	116.455	43.33	70.81	1491
170.000	18.688	.05351	14.5477	363.465	10847.7	10853.2	120.773	43.31	71.65	1414
180.000	18.282	.05470	13.2107	320.725	11569.1	11574.7	124.896	43.38	72.68	1336
184.547	18.094	.05527	12.6381	302.271	11900.8	11906.4	126.716	43.43	73.22	1301
184.547	.06838	14.624	.005869	14.307	25192.3	26674.1	206.613	33.29	42.79	247
190.000	.06622	15.101	.005664	14.822	25379.0	26909.1	208.073	33.62	43.00	251
200.000	.06263	15.968	.005332	15.749	25723.5	27341.5	210.290	34.31	43.52	257
210.000	.05942	16.828	.005042	16.661	26074.7	27779.8	212.428	35.10	44.17	264
220.000	.05655	17.682	.004786	17.561	26433.5	28225.2	214.499	35.95	44.92	270
230.000	.05396	18.532	.004557	18.452	26800.6	28678.4	216.513	36.85	45.74	275
240.000	.05160	19.379	.004350	19.335	27176.6	29140.2	218.478	37.82	46.64	281
250.000	.04945	20.222	.004163	20.213	27562.2	29611.3	220.401	38.83	47.59	287
260.000	.04748	21.063	.003992	21.085	27957.9	30092.2	222.286	39.88	48.60	292
270.000	.04566	21.902	.003835	21.953	28364.1	30583.4	224.140	40.97	49.65	297
280.000	.04398	22.740	.003691	22.818	28781.2	31085.3	225.965	42.11	50.75	302
290.000	.04242	23.579	.003557	23.679	29209.6	31598.4	227.765	43.27	51.88	307
300.000	.04097	24.418	.003434	24.538	29649.7	32123.0	229.543	44.46	53.05	312
310.000	.03962	25.243	.003318	25.394	30101.7	32659.4	231.302	45.68	54.24	316
320.000	.03835	26.075	.003211	26.248	30565.8	33207.9	233.043	46.92	55.46	321
330.000	.03717	26.906	.003110	27.101	31042.4	33768.7	234.769	48.17	56.70	325
340.000	.03605	27.737	.003016	27.952	31531.5	34341.9	236.480	49.44	57.95	330
350.000	.03501	28.567	.002927	28.801	32033.2	34927.7	238.178	50.72	59.22	334
360.000	.03402	29.396	.002844	29.650	32547.8	35526.3	239.864	52.01	60.50	338
370.000	.03309	30.224	.002765	30.497	33075.2	36137.7	241.539	53.31	61.78	342
380.000	.03220	31.052	.002691	31.343	33615.6	36761.9	243.204	54.61	63.07	346
390.000	.03137	31.880	.002620	32.188	34168.9	37399.1	244.859	55.91	64.36	351
400.000	.03057	32.707	.002553	33.032	34735.1	38049.1	246.504	57.20	65.65	355
410.000	.02982	33.533	.002490	33.875	35314.2	38711.9	248.141	58.49	66.93	359
420.000	.02910	34.360	.002430	34.718	35906.1	39387.6	249.769	59.78	68.21	362
430.000	.02842	35.186	.002372	35.560	36510.9	40076.1	251.389	61.06	69.48	366
440.000	.02777	36.012	.002317	36.401	37128.3	40777.2	253.001	62.33	70.75	370
450.000	.02715	36.837	.002265	37.242	37758.4	41490.9	254.605	63.59	72.00	374
460.000	.02655	37.662	.002215	38.083	38401.0	42217.1	256.201	64.84	73.24	378
470.000	.02598	38.487	.002167	38.923	39056.0	42955.7	257.789	66.07	74.48	381
480.000	.02544	39.312	.002122	39.762	39723.3	43706.6	259.370	67.30	75.70	385
490.000	.02492	40.136	.002078	40.601	40402.7	44469.5	260.943	68.51	76.90	389
500.000	.02441	40.961	.002036	41.440	41094.2	45244.5	262.509	69.71	78.10	392
520.000	.02347	42.609	.001957	43.117	42512.7	46830.0	265.618	72.06	80.44	400
540.000	.02260	44.256	.001884	44.792	43977.6	48461.9	268.697	74.36	82.74	407
560.000	.02178	45.903	.001816	46.466	45487.9	50139.0	271.746	76.60	84.97	414
580.000	.02103	47.550	.001753	48.139	47042.4	51860.4	274.766	78.79	87.16	420
600.000	.02033	49.196	.001694	49.812	48640.1	53624.9	277.757	80.93	89.29	427
620.000	.01967	50.842	.001639	51.484	50280.1	55431.6	280.719	83.01	91.37	434
640.000	.01905	52.487	.001587	53.155	51961.2	57279.4	283.652	85.05	93.41	440
660.000	.01847	54.132	.001539	54.825	53682.5	59167.4	286.557	87.04	95.39	447
680.000	.01793	55.777	.001493	56.495	55443.1	61094.7	289.434	88.98	97.33	453
700.000	.01741	57.422	.001450	58.165	57242.2	63060.4	292.283	90.88	99.23	459

Table 24. Continued.

ETHANE ISOBAR AT P = 1.50000 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.372	21.681	.04612	30.9737	851.799	5318.1	5325.1	76.992	46.30	67.96	2038
100.000	21.330	.04688	28.3347	777.113	5974.6	5981.7	83.895	45.68	68.39	1966
110.000	20.965	.04770	25.7744	703.471	6659.7	6666.9	90.427	45.03	68.66	1888
120.000	20.597	.04855	23.4283	634.898	7347.5	7354.8	96.412	44.46	68.91	1809
130.000	20.227	.04944	21.2954	571.552	8038.0	8045.4	101.940	44.00	69.22	1729
140.000	19.852	.05037	19.3611	513.187	8732.0	8739.5	107.083	43.67	69.62	1649
150.000	19.472	.05136	17.6058	459.389	9430.5	9438.2	111.903	43.44	70.14	1570
160.000	19.085	.05240	16.0091	409.711	10134.9	10142.7	116.450	43.33	70.81	1492
170.000	18.690	.05351	14.5515	363.707	10846.8	10854.8	120.767	43.31	71.65	1414
180.000	18.284	.05469	13.2146	320.973	11568.0	11576.2	124.890	43.38	72.67	1337
190.000	17.865	.05597	11.9820	281.147	12300.6	12309.0	128.852	43.52	73.92	1260
192.150	17.773	.05626	11.7291	272.933	12459.9	12468.3	129.685	43.56	74.22	1243
192.150	.09832	10.170	.008534	14.553	25404.0	26929.6	204.839	34.08	44.03	250
200.000	.09395	10.643	.008104	15.324	25680.9	27277.4	206.818	34.55	44.26	255
210.000	.08898	11.239	.007631	16.281	26036.6	27722.4	208.988	35.27	44.76	262
220.000	.08454	11.828	.007220	17.218	26398.9	28173.1	211.084	36.09	45.40	268
230.000	.08056	12.412	.006857	18.140	26768.9	28630.8	213.118	36.97	46.15	274
240.000	.07696	12.993	.006533	19.050	27147.4	29096.4	215.099	37.91	46.99	280
250.000	.07369	13.571	.006242	19.951	27535.2	29570.7	217.035	38.91	47.90	285
260.000	.07069	14.146	.005977	20.844	27932.7	30054.5	218.932	39.95	48.87	291
270.000	.06794	14.718	.005736	21.730	28340.5	30548.2	220.795	41.03	49.89	296
280.000	.06541	15.289	.005515	22.611	28759.0	31052.4	222.628	42.16	50.96	301
290.000	.06306	15.859	.005311	23.487	29188.7	31567.5	224.435	43.31	52.07	306
300.000	.06088	16.427	.005122	24.359	29629.9	32093.9	226.220	44.50	53.22	311
310.000	.05885	16.993	.004947	25.227	30082.9	32631.9	227.984	45.71	54.40	315
320.000	.05695	17.559	.004784	26.093	30548.0	33181.9	229.730	46.95	55.60	320
330.000	.05518	18.124	.004632	26.955	31025.4	33744.0	231.459	48.20	56.83	325
340.000	.05351	18.688	.004489	27.815	31515.3	34318.5	233.174	49.47	58.07	329
350.000	.05194	19.251	.004356	28.673	32017.8	34905.5	234.875	50.75	59.33	333
360.000	.05047	19.814	.004230	29.529	32533.0	35505.1	236.564	52.04	60.60	338
370.000	.04908	20.376	.004111	30.383	33061.0	36117.5	238.242	53.33	61.88	342
380.000	.04776	20.938	.004000	31.236	33601.9	36742.6	239.909	54.63	63.16	346
390.000	.04651	21.499	.003894	32.087	34155.7	37380.6	241.566	55.92	64.44	350
400.000	.04533	22.060	.003794	32.937	34722.4	38031.4	243.214	57.22	65.72	354
410.000	.04421	22.620	.003699	33.786	35302.0	38695.0	244.852	58.51	67.00	358
420.000	.04314	23.180	.003608	34.634	35894.4	39371.3	246.482	59.79	68.28	362
430.000	.04212	23.739	.003522	35.481	36499.5	40060.4	248.104	61.07	69.54	366
440.000	.04115	24.299	.003440	36.327	37117.3	40762.2	249.717	62.34	70.80	370
450.000	.04023	24.858	.003362	37.172	37747.8	41476.4	251.322	63.60	72.06	374
460.000	.03934	25.417	.003288	38.017	38390.7	42203.2	252.919	64.85	73.30	378
470.000	.03850	25.975	.003216	38.861	39046.0	42942.3	254.509	66.08	74.53	381
480.000	.03769	26.533	.003148	39.704	39713.6	43693.6	256.090	67.31	75.74	385
490.000	.03691	27.092	.003083	40.546	40393.3	44457.1	257.665	68.52	76.95	389
500.000	.03617	27.650	.003020	41.388	41085.1	45232.5	259.231	69.72	78.14	392
520.000	.03476	28.765	.002902	43.071	42504.0	46818.8	262.342	72.07	80.48	399
540.000	.03347	29.880	.002793	44.751	43969.4	48451.4	265.422	74.37	82.77	406
560.000	.03226	30.994	.002692	46.431	45480.1	50129.2	268.473	76.61	85.01	413
580.000	.03115	32.108	.002598	48.108	47035.0	51851.2	271.494	78.80	87.19	420
600.000	.03010	33.221	.002511	49.785	48633.1	53616.3	274.486	80.93	89.32	427
620.000	.02913	34.334	.002429	51.461	50273.3	55423.5	277.449	83.02	91.40	434
640.000	.02821	35.447	.002352	53.135	51954.7	57271.8	280.383	85.05	93.43	440
660.000	.02735	36.559	.002281	54.809	53676.3	59160.2	283.288	87.04	95.41	446
680.000	.02655	37.671	.002213	56.482	55437.2	61087.9	286.165	88.99	97.35	453
700.000	.02578	38.783	.002149	58.154	57236.5	63054.0	289.015	90.89	99.25	459

Table 24. Continued.

ETHANE ISOBAR AT P = 2 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.380	21.681	.04612	30.9740	851.932	5318.3	5327.6	76.994	46.31	67.96	2039
100.000	21.331	.04688	28.3376	777.325	5974.2	5983.6	83.891	45.68	68.39	1967
110.000	20.966	.04770	25.7774	703.693	6659.3	6668.8	90.423	45.03	68.66	1888
120.000	20.598	.04855	23.4316	635.127	7347.0	7356.7	96.408	44.46	68.91	1809
130.000	20.227	.04944	21.2988	571.786	8037.4	8047.3	101.935	44.01	69.21	1729
140.000	19.853	.05037	19.3646	513.425	8731.3	8741.4	107.078	43.67	69.61	1649
150.000	19.473	.05135	17.6094	459.631	9429.7	9440.0	111.898	43.45	70.13	1570
160.000	19.086	.05239	16.0129	409.956	10134.0	10144.5	116.445	43.33	70.80	1492
170.000	18.691	.05350	14.5554	363.957	10845.8	10856.5	120.761	43.31	71.64	1414
180.000	18.285	.05469	13.2187	321.227	11566.9	11577.9	124.884	43.38	72.66	1337
190.000	17.867	.05597	11.9862	281.407	12299.4	12310.6	128.845	43.52	73.91	1260
198.177	17.513	.05710	11.0452	250.789	12908.4	12919.8	131.984	43.69	75.12	1197
198.177	.12846	7.785	.011266	14.681	25568.3	27125.2	203.570	34.76	45.14	251
200.000	.12707	7.869	.011122	14.870	25635.3	27209.2	204.196	34.85	45.15	253
210.000	.12007	8.328	.010419	15.879	25996.2	27661.9	206.404	35.48	45.44	260
220.000	.11389	8.780	.009821	16.859	26362.6	28118.6	208.528	36.24	45.95	266
230.000	.10838	9.227	.009302	17.815	26735.9	28581.3	210.584	37.09	46.61	272
240.000	.10342	9.670	.008843	18.755	27117.1	29051.1	212.583	38.01	47.37	278
250.000	.09892	10.109	.008434	19.681	27507.1	29529.0	214.534	38.99	48.23	284
260.000	.09482	10.545	.008064	20.596	27906.6	30015.8	216.442	40.02	49.15	290
270.000	.09107	10.980	.007729	21.502	28316.2	30512.2	218.316	41.10	50.14	295
280.000	.08762	11.413	.007423	22.400	28736.2	31018.7	220.158	42.21	51.18	300
290.000	.08443	11.843	.007142	23.291	29167.3	31536.0	221.972	43.36	52.27	305
300.000	.08148	12.273	.006883	24.177	29609.7	32064.3	223.763	44.54	53.40	310
310.000	.07873	12.701	.006643	25.058	30063.8	32604.0	225.533	45.75	54.56	315
320.000	.07617	13.128	.006421	25.934	30529.8	33155.5	227.283	46.98	55.75	319
330.000	.07378	13.555	.006213	26.807	31008.1	33719.0	229.017	48.23	56.96	324
340.000	.07153	13.980	.006019	27.677	31498.8	34294.8	230.736	49.50	58.20	328
350.000	.06942	14.405	.005838	28.543	32002.0	34883.0	232.441	50.77	59.44	333
360.000	.06744	14.829	.005667	29.408	32517.9	35483.7	234.133	52.06	60.70	337
370.000	.06556	15.252	.005506	30.269	33046.6	36097.0	235.813	53.35	61.97	341
380.000	.06380	15.675	.005355	31.129	33588.1	36723.1	237.483	54.65	63.25	346
390.000	.06212	16.098	.005212	31.987	34142.4	37361.9	239.142	55.94	64.52	350
400.000	.06053	16.520	.005077	32.843	34709.6	38013.5	240.792	57.23	65.80	354
410.000	.05903	16.941	.004948	33.697	35289.6	38677.9	242.432	58.52	67.07	358
420.000	.05760	17.363	.004827	34.551	35882.4	39355.0	244.064	59.81	68.34	362
430.000	.05623	17.784	.004711	35.403	36488.0	40044.7	245.687	61.08	69.61	366
440.000	.05493	18.204	.004600	36.253	37106.2	40747.1	247.301	62.35	70.87	370
450.000	.05369	18.625	.004495	37.103	37737.0	41461.9	248.908	63.61	72.11	374
460.000	.05251	19.045	.004395	37.951	38380.3	42189.2	250.506	64.86	73.35	377
470.000	.05138	19.465	.004299	38.799	39035.9	42928.9	252.097	66.09	74.58	381
480.000	.05029	19.884	.004207	39.646	39703.8	43680.7	253.680	67.32	75.79	385
490.000	.04925	20.304	.004119	40.492	40383.8	44444.6	255.255	68.53	76.99	388
500.000	.04826	20.723	.004035	41.337	41075.8	45220.5	256.822	69.72	78.18	392
520.000	.04638	21.561	.003877	43.026	42495.3	46807.6	259.934	72.08	80.52	399
540.000	.04465	22.399	.003731	44.712	43961.1	48440.9	263.016	74.37	82.81	406
560.000	.04304	23.236	.003595	46.397	45472.3	50119.4	266.068	76.62	85.04	413
580.000	.04154	24.072	.003469	48.079	47027.6	51842.0	269.090	78.80	87.22	420
600.000	.04015	24.908	.003352	49.760	48626.0	53607.7	272.083	80.94	89.34	427
620.000	.03884	25.744	.003243	51.440	50266.5	55415.4	275.047	83.02	91.42	434
640.000	.03762	26.580	.003140	53.118	51948.2	57264.2	277.982	85.06	93.45	440
660.000	.03648	27.415	.003044	54.795	53670.1	59153.1	280.888	87.05	95.44	446
680.000	.03540	28.250	.002954	56.471	55431.3	61081.2	283.766	88.99	97.37	453
700.000	.03438	29.084	.002868	58.146	57230.8	63047.7	286.616	90.89	99.27	459

Table 24. Continued.

ETHANE ISOBAR AT P = 3 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.397	21.682	.04612	30.9745	852.199	5318.7	5332.6	76.999	46.31	67.96	2039
100.000	21.332	.04688	28.3433	777.749	5973.4	5987.5	83.883	45.68	68.38	1967
110.000	20.967	.04768	25.7836	704.137	6658.4	6672.7	90.414	45.04	68.66	1889
120.000	20.600	.04854	23.4381	635.584	7345.9	7360.5	96.399	44.47	68.91	1809
130.000	20.229	.04943	21.3056	572.253	8036.2	8051.1	101.926	44.01	69.21	1729
140.000	19.855	.05037	19.3716	513.900	8729.9	8745.1	107.069	43.67	69.60	1650
150.000	19.475	.05135	17.6166	460.113	9428.2	9443.6	111.888	43.45	70.13	1571
160.000	19.088	.05239	16.0204	410.446	10132.3	10148.0	116.434	43.34	70.79	1493
170.000	18.694	.05349	14.5631	364.455	10843.9	10859.9	120.750	43.32	71.63	1415
180.000	18.289	.05468	13.2267	321.734	11564.7	11581.1	124.872	43.38	72.65	1338
190.000	17.870	.05596	11.9946	281.925	12296.8	12313.6	128.832	43.53	73.89	1261
200.000	17.436	.05735	10.8516	244.716	13042.6	13059.8	132.659	43.74	75.39	1184
207.404	17.102	.05847	10.0546	218.684	13605.2	13622.8	135.423	43.93	76.72	1126
207.404	.18766	5.329	.016773	14.747	25811.9	27410.5	201.822	35.88	47.11	253
210.000	.13476	5.412	.016452	15.036	25911.0	27534.7	202.622	36.00	47.07	255
220.000	.17455	5.729	.015371	16.112	26287.0	28005.8	204.813	36.61	47.20	262
230.000	.16558	6.039	.014465	17.147	26667.8	28479.6	206.919	37.38	47.61	269
240.000	.15781	6.343	.013684	18.150	27055.1	28958.6	208.957	38.24	48.21	275
250.000	.15045	6.647	.012999	19.131	27450.2	29444.2	210.938	39.18	48.94	281
260.000	.14398	6.945	.012391	20.092	27854.0	29937.6	212.873	40.18	49.76	287
270.000	.13809	7.242	.011844	21.039	28267.2	30439.7	214.768	41.23	50.67	293
280.000	.13270	7.538	.011350	21.973	28690.4	30951.3	216.628	42.33	51.65	298
290.000	.12774	7.829	.010900	22.896	29124.3	31472.9	218.458	43.46	52.69	303
300.000	.12316	8.120	.010488	23.811	29569.2	32005.1	220.262	44.63	53.77	308
310.000	.11891	8.409	.010109	24.718	30025.6	32548.4	222.043	45.83	54.89	313
320.000	.11497	8.698	.009758	25.618	30493.6	33103.1	223.804	47.05	56.05	318
330.000	.11129	8.986	.009433	26.512	30973.7	33669.5	225.547	48.30	57.24	323
340.000	.10784	9.273	.009130	27.401	31466.1	34247.9	227.274	49.55	58.45	327
350.000	.10462	9.559	.008847	28.286	31970.8	34838.4	228.985	50.83	59.67	332
360.000	.10158	9.844	.008582	29.166	32488.1	35441.4	230.684	52.11	60.92	336
370.000	.09872	10.129	.008333	30.043	33018.0	36056.8	232.370	53.39	62.17	341
380.000	.09603	10.413	.008099	30.917	33560.7	36684.7	234.044	54.69	63.43	345
390.000	.09348	10.697	.007879	31.788	34116.1	37325.3	235.708	55.98	64.69	349
400.000	.09107	10.981	.007670	32.657	34684.3	37978.5	237.362	57.27	65.96	353
410.000	.08878	11.264	.007473	33.523	35265.3	38644.4	239.006	58.56	67.22	357
420.000	.08661	11.546	.007286	34.387	35859.0	39322.9	240.641	59.84	68.48	361
430.000	.08454	11.829	.007108	35.248	36465.3	40014.0	242.267	61.11	69.74	365
440.000	.08257	12.111	.006940	36.109	37084.3	40717.6	243.884	62.38	70.99	369
450.000	.08069	12.392	.006779	36.967	37715.8	41433.6	245.494	63.63	72.23	373
460.000	.07890	12.674	.006626	37.824	38359.8	42162.0	247.094	64.88	73.46	377
470.000	.07719	12.955	.006479	38.680	39016.1	42902.6	248.687	66.12	74.68	381
480.000	.07555	13.236	.006340	39.534	39684.6	43655.5	250.272	67.34	75.89	384
490.000	.07398	13.517	.006206	40.387	40365.1	44420.3	251.849	68.55	77.08	388
500.000	.07248	13.798	.006078	41.239	41057.7	45197.0	253.418	69.74	78.27	392
520.000	.06964	14.359	.005837	42.940	42478.2	46785.8	256.534	72.09	80.60	399
540.000	.06703	14.919	.005615	44.638	43944.9	48420.6	259.618	74.39	82.88	406
560.000	.06461	15.479	.005410	46.332	45456.9	50100.4	262.673	76.63	85.10	413
580.000	.06235	16.038	.005219	48.024	47012.9	51824.3	265.697	78.81	87.28	420
600.000	.06025	16.597	.005042	49.714	48612.0	53591.1	268.692	80.95	89.40	427
620.000	.05829	17.155	.004876	51.401	50253.2	55399.8	271.657	83.03	91.47	433
640.000	.05645	17.713	.004721	53.087	51935.5	57249.5	274.593	85.07	93.50	440
660.000	.05473	18.271	.004575	54.770	53657.9	59139.3	277.501	87.06	95.48	446
680.000	.05311	18.829	.004439	56.453	55419.6	61068.3	280.380	89.00	97.41	453
700.000	.05158	19.386	.004310	58.134	57219.6	63035.5	283.231	90.90	99.31	459

Table 24. Continued.

ETHANE ISOBAR AT P = 4 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.413	21.682	.04612	30.9751	852.466	5319.1	5337.6	77.003	46.31	67.95	2039
100.000	21.334	.04687	28.3490	778.173	5972.6	5991.4	83.875	45.69	68.38	1968
110.000	20.968	.04769	25.7897	704.580	6657.5	6676.5	90.406	45.04	68.65	1889
120.000	20.601	.04854	23.4445	636.042	7344.9	7364.3	96.390	44.47	68.90	1810
130.000	20.231	.04943	21.3124	572.721	8035.0	8054.8	101.917	44.01	69.20	1730
140.000	19.857	.05036	19.3786	514.375	8728.6	8748.8	107.059	43.67	69.60	1651
150.000	19.477	.05134	17.6239	460.596	9426.7	9447.2	111.878	43.45	70.12	1572
160.000	19.091	.05238	16.0279	410.937	10130.6	10151.5	116.423	43.34	70.78	1493
170.000	18.696	.05349	14.5709	364.953	10841.9	10863.3	120.739	43.32	71.61	1416
180.000	18.292	.05467	13.2348	322.242	11562.5	11584.4	124.860	43.39	72.63	1339
190.000	17.874	.05595	12.0030	282.444	12294.3	12316.7	128.819	43.53	73.87	1262
200.000	17.440	.05734	10.8605	245.248	13039.7	13062.7	132.644	43.74	75.36	1185
210.000	16.987	.05887	9.7933	210.388	13801.6	13825.1	136.364	44.01	77.19	1107
214.530	16.773	.05962	9.3310	195.301	14153.1	14176.9	138.022	44.16	78.15	1072
214.530	.24616	4.062	.022384	14.679	25992.3	27617.2	200.604	36.82	48.91	254
220.000	.23817	4.199	.021463	15.323	26206.8	27886.2	202.047	37.07	48.72	258
230.000	.22511	4.442	.020040	16.448	26596.6	28373.4	204.212	37.71	48.79	266
240.000	.21367	4.680	.018851	17.524	26990.9	28862.9	206.295	38.50	49.16	272
250.000	.20351	4.914	.017829	18.564	27391.7	29357.2	208.312	39.39	49.72	279
260.000	.19440	5.144	.016935	19.577	27800.1	29857.8	210.275	40.35	50.43	285
270.000	.18616	5.372	.016143	20.567	28217.4	30366.1	212.193	41.38	51.25	291
280.000	.17866	5.597	.015433	21.539	28644.1	30883.0	214.073	42.45	52.15	296
290.000	.17180	5.821	.014791	22.497	29081.0	31409.3	215.919	43.57	53.13	302
300.000	.16548	6.043	.014208	23.441	29528.5	31945.7	217.737	44.73	54.16	307
310.000	.15965	6.264	.013674	24.375	29987.2	32492.6	219.531	45.91	55.24	312
320.000	.15425	6.483	.013183	25.299	30457.4	33050.6	221.302	47.13	56.37	317
330.000	.14922	6.702	.012730	26.216	30939.4	33620.0	223.054	48.36	57.52	322
340.000	.14452	6.919	.012309	27.125	31433.4	34201.1	224.789	49.61	58.71	326
350.000	.14013	7.136	.011917	28.028	31939.7	34794.2	226.508	50.88	59.91	331
360.000	.13601	7.352	.011552	28.925	32458.4	35399.4	228.212	52.16	61.13	335
370.000	.13214	7.568	.011209	29.818	32989.7	36016.8	229.904	53.44	62.37	340
380.000	.12848	7.783	.010888	30.706	33533.5	36646.7	231.584	54.73	63.61	344
390.000	.12504	7.998	.010585	31.590	34090.0	37289.1	233.252	56.01	64.86	348
400.000	.12178	8.212	.010300	32.471	34659.3	37943.9	234.910	57.30	66.12	352
410.000	.11869	8.425	.010031	33.349	35241.2	38611.3	236.558	58.59	67.37	357
420.000	.11576	8.639	.009776	34.224	35835.8	39291.3	238.196	59.87	68.62	361
430.000	.11297	8.852	.009534	35.096	36443.0	39983.7	239.826	61.14	69.87	365
440.000	.11032	9.064	.009305	35.965	37062.7	40688.5	241.446	62.40	71.11	369
450.000	.10779	9.277	.009086	36.833	37695.0	41405.7	243.058	63.66	72.34	373
460.000	.10538	9.489	.008878	37.698	38339.6	42135.3	244.661	64.90	73.56	376
470.000	.10308	9.701	.008680	38.562	38996.5	42876.9	246.256	66.14	74.78	380
480.000	.10088	9.913	.008491	39.424	39665.6	43630.7	247.843	67.36	75.98	384
490.000	.09877	10.124	.008310	40.284	40346.8	44396.5	249.422	68.57	77.17	388
500.000	.09675	10.336	.008136	41.143	41039.9	45174.1	250.993	69.76	78.35	392
520.000	.09296	10.758	.007811	42.856	42461.3	46764.5	254.111	72.11	80.68	399
540.000	.08945	11.179	.007512	44.565	43929.0	48400.8	257.199	74.40	82.95	406
560.000	.08620	11.601	.007235	46.270	45441.8	50082.0	260.256	76.64	85.17	413
580.000	.08319	12.021	.006978	47.971	46998.5	51807.0	263.282	78.83	87.33	420
600.000	.08038	12.441	.006739	49.669	48598.4	53574.9	266.279	80.96	89.45	427
620.000	.07775	12.861	.006516	51.365	50240.2	55384.7	269.246	83.04	91.52	433
640.000	.07530	13.281	.006308	53.057	51923.0	57235.3	272.183	85.08	93.54	440
660.000	.07299	13.700	.006113	54.748	53646.0	59126.0	275.092	87.06	95.52	446
680.000	.07083	14.119	.005930	56.436	55408.1	61055.8	277.973	89.01	97.45	453
700.000	.06879	14.538	.005757	58.123	57208.6	63023.7	280.825	90.91	99.34	459

Table 24. Continued.

ETHANE ISOBAR AT P = 5 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.429	21.683	.04612	30.9756	852.733	5319.6	5342.6	77.008	46.31	67.95	2039
100.000	21.335	.04687	28.3547	778.596	5971.8	5995.3	83.867	45.69	68.38	1968
110.000	20.970	.04769	25.7959	705.024	6656.5	6680.4	90.398	45.04	68.65	1890
120.000	20.603	.04854	23.4510	636.499	7343.8	7368.1	96.382	44.47	68.90	1810
130.000	20.233	.04942	21.3191	573.188	8033.9	8058.6	101.908	44.02	69.20	1731
140.000	19.859	.05036	19.3857	514.851	8727.3	8752.5	107.049	43.68	69.59	1651
150.000	19.479	.05134	17.6312	461.079	9425.2	9450.8	111.868	43.46	70.11	1572
160.000	19.093	.05237	16.0354	411.427	10128.9	10155.1	116.413	43.34	70.77	1494
170.000	18.699	.05348	14.5786	365.452	10840.0	10866.7	120.727	43.32	71.60	1417
180.000	18.295	.05466	13.2428	322.749	11560.3	11587.6	124.847	43.39	72.61	1340
190.000	17.878	.05594	12.0114	282.962	12291.8	12319.8	128.805	43.53	73.85	1263
200.000	17.445	.05732	10.8693	245.779	13036.8	13065.5	132.630	43.75	75.34	1186
210.000	16.992	.05885	9.8026	210.935	13798.2	13827.6	136.348	44.02	77.15	1108
220.000	16.513	.06056	8.7982	178.198	14579.6	14609.9	139.987	44.35	79.40	1030
220.425	16.492	.06064	8.7566	176.850	14613.4	14643.7	140.141	44.37	79.51	1026
220.425	.30444	3.285	.028130	14.536	26135.4	27777.8	199.666	37.66	50.60	254
230.000	.28730	3.481	.026099	15.715	26521.4	28251.8	202.020	38.09	50.17	262
240.000	.27181	3.679	.024387	16.874	26924.0	28763.5	204.155	38.78	50.23	269
250.000	.25824	3.872	.022952	17.980	27331.2	29267.4	206.211	39.61	50.59	276
260.000	.24618	4.062	.021718	19.048	27744.9	29776.0	208.206	40.53	51.16	282
270.000	.23536	4.249	.020638	20.085	28166.5	30291.0	210.149	41.53	51.87	288
280.000	.22557	4.433	.019681	21.098	28597.0	30813.6	212.049	42.58	52.68	294
290.000	.21665	4.616	.018823	22.091	29037.1	31344.9	213.914	43.68	53.59	300
300.000	.20849	4.796	.018049	23.067	29487.4	31885.6	215.747	44.82	54.57	305
310.000	.20097	4.976	.017344	24.028	29948.6	32436.5	217.553	46.00	55.61	310
320.000	.19403	5.154	.016700	24.978	30421.0	32997.9	219.335	47.20	56.69	315
330.000	.18758	5.331	.016107	25.917	30904.9	33570.4	221.096	48.43	57.82	320
340.000	.18158	5.507	.015559	26.846	31400.7	34154.3	222.839	49.67	58.97	325
350.000	.17596	5.683	.015051	27.768	31908.6	34749.9	224.566	50.93	60.15	330
360.000	.17073	5.857	.014577	28.683	32428.8	35357.4	226.277	52.21	61.36	334
370.000	.16580	6.031	.014136	29.591	32961.4	35977.0	227.974	53.48	62.57	339
380.000	.16116	6.205	.013722	30.494	33506.4	36608.9	229.659	54.77	63.80	343
390.000	.15679	6.378	.013333	31.392	34064.1	37253.0	231.333	56.05	65.04	348
400.000	.15266	6.550	.012966	32.286	34634.4	37909.6	232.995	57.34	66.28	352
410.000	.14875	6.723	.012623	33.175	35217.3	38578.5	234.646	58.62	67.52	356
420.000	.14505	6.894	.012297	34.061	35812.7	39259.9	236.288	59.90	68.76	360
430.000	.14153	7.066	.011988	34.943	36420.8	39953.7	237.921	61.17	70.00	364
440.000	.13818	7.237	.011696	35.822	37041.3	40659.8	239.544	62.43	71.23	368
450.000	.13499	7.408	.011418	36.699	37674.3	41378.2	241.158	63.68	72.45	372
460.000	.13195	7.578	.011153	37.573	38319.6	42108.8	242.764	64.93	73.67	376
470.000	.12905	7.749	.010901	38.444	38977.2	42851.5	244.361	66.16	74.88	380
480.000	.12628	7.919	.010660	39.314	39646.9	43606.3	245.950	67.38	76.08	384
490.000	.12363	8.089	.010431	40.181	40328.6	44373.0	247.531	68.58	77.27	387
500.000	.12109	8.259	.010211	41.047	41022.2	45151.5	249.104	69.78	78.44	391
520.000	.11631	8.598	.009799	42.773	42444.7	46743.5	252.226	72.12	80.75	399
540.000	.11191	8.936	.009421	44.493	43913.3	48381.3	255.316	74.42	83.02	406
560.000	.10783	9.274	.009071	46.209	45426.8	50063.8	258.375	76.65	85.23	413
580.000	.10404	9.611	.008747	47.919	46984.4	51790.1	261.404	78.84	87.39	420
600.000	.10052	9.948	.008445	49.626	48584.9	53559.1	264.402	80.97	89.50	427
620.000	.09723	10.285	.008165	51.329	50227.3	55369.8	267.371	83.05	91.57	433
640.000	.09415	10.621	.007902	53.029	51910.7	57221.4	270.310	85.09	93.59	440
660.000	.09126	10.958	.007656	54.726	53634.2	59113.0	273.220	87.07	95.56	446
680.000	.08855	11.293	.007426	56.421	55396.9	61043.5	276.102	89.02	97.49	453
700.000	.08599	11.629	.007209	58.113	57197.8	63012.3	278.955	90.91	99.38	459

Table 24. Continued.

ETHANE ISOBAR AT P = 6 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.445	21.684	.04612	30.9762	853.000	5320.0	5347.6	77.012	46.31	67.95	2040
100.000	21.3[illegible]	.04687	28.3603	779.020	5971.0	5939.2	83.859	45.69	68.37	1968
110.000	20.971	.04768	25.8020	705.467	6655.6	6684.2	90.389	45.04	68.65	1890
120.000	20.604	.04853	23.4575	636.956	7342.8	7371.9	96.373	44.48	68.89	1811
130.000	20.234	.04942	21.3259	573.655	8032.7	8062.3	101.899	44.02	69.19	1731
140.000	19.861	.05035	19.3927	515.326	8725.9	8756.2	107.040	43.68	69.58	1652
150.000	19.481	.05133	17.6384	461.561	9423.7	9454.5	111.858	43.46	70.10	1573
160.000	19.096	.05237	16.0428	411.916	10127.2	10158.6	116.402	43.35	70.76	1495
170.000	18.702	.05347	14.5864	365.949	10838.1	10870.1	120.716	43.33	71.59	1418
180.000	18.298	.05465	13.2509	323.256	11558.1	11590.9	124.835	43.39	72.60	1341
190.000	17.881	.05592	12.0198	283.479	12289.3	12322.8	128.792	43.54	73.82	1264
200.000	17.449	.05731	10.8782	246.309	13033.9	13068.3	132.615	43.75	75.31	1187
210.000	16.996	.05884	9.8120	211.481	13794.8	13830.1	136.332	44.02	77.12	1109
220.000	16.519	.06054	8.8083	178.763	14575.7	14612.0	139.969	44.36	79.35	1031
225.500	16.242	.06157	8.2782	161.597	15015.4	15052.3	141.946	44.56	80.81	987
225.500	.36278	2.756	.034031	14.346	26253.5	27907.4	198.899	38.42	52.25	254
230.000	.35253	2.837	.032739	14.944	26441.7	28143.7	200.142	38.55	51.83	258
240.000	.33229	3.009	.030347	16.197	26853.9	28659.6	202.337	39.11	51.47	266
250.000	.31480	3.177	.028401	17.378	27268.5	29174.4	204.439	39.86	51.57	273
260.000	.29943	3.340	.026761	18.506	27688.1	29691.8	206.467	40.73	51.95	280
270.000	.28576	3.499	.025345	19.593	28114.4	30214.1	208.438	41.69	52.53	286
280.000	.27347	3.657	.024105	20.649	28548.9	30742.9	210.351	42.72	53.25	292
290.000	.26235	3.812	.023004	21.679	28992.5	31279.5	212.244	43.80	54.08	298
300.000	.25220	3.965	.022016	22.687	29445.8	31824.9	214.092	44.93	55.00	303
310.000	.24290	4.117	.021123	23.678	29909.6	32379.7	215.912	46.09	55.99	309
320.000	.23432	4.268	.020311	24.653	30384.2	32944.8	217.705	47.28	57.03	314
330.000	.22639	4.417	.019566	25.615	30870.2	33520.5	219.477	48.50	58.12	319
340.000	.21902	4.566	.018882	26.566	31367.9	34107.3	221.228	49.74	59.25	324
350.000	.21216	4.713	.018248	27.507	31877.4	34705.5	222.962	50.99	60.40	329
360.000	.20574	4.861	.017661	28.439	32399.1	35315.4	224.680	52.26	61.58	333
370.000	.19972	5.007	.017113	29.364	32933.0	35937.2	226.384	53.53	62.78	338
380.000	.19407	5.153	.016602	30.282	33479.4	36571.0	228.074	54.81	63.99	342
390.000	.18875	5.298	.016123	31.193	34038.2	37217.0	229.752	56.09	65.21	347
400.000	.18373	5.443	.015673	32.100	34609.5	37875.3	231.418	57.37	66.44	351
410.000	.17898	5.587	.015249	33.001	35193.4	38545.8	233.074	58.65	67.67	355
420.000	.17448	5.731	.014849	33.898	35789.8	39228.6	234.719	59.93	68.90	360
430.000	.17021	5.875	.014471	34.790	36398.7	39923.8	236.355	61.20	70.13	364
440.000	.16615	6.019	.014113	35.679	37020.0	40631.2	237.981	62.46	71.35	368
450.000	.16229	6.162	.013773	36.565	37653.7	41350.8	239.598	63.71	72.57	372
460.000	.15861	6.305	.013450	37.447	38299.7	42082.5	241.207	64.95	73.78	376
470.000	.15510	6.447	.013142	38.327	38958.0	42826.3	242.806	66.18	74.98	380
480.000	.15175	6.590	.012849	39.204	39628.3	43582.1	244.397	67.40	76.17	383
490.000	.14855	6.732	.012569	40.079	40310.6	44349.7	245.980	68.60	77.36	387
500.000	.14548	6.874	.012302	40.951	41004.8	45129.1	247.555	69.80	78.53	391
520.000	.13971	7.157	.011802	42.690	42428.2	46722.7	250.680	72.14	80.83	398
540.000	.13440	7.440	.011342	44.422	43897.7	48362.0	253.773	74.43	83.09	406
560.000	.12949	7.723	.010917	46.147	45412.1	50045.8	256.834	76.67	85.29	413
580.000	.12492	8.005	.010525	47.867	46970.4	51773.3	259.865	78.85	87.45	420
600.000	.12068	8.286	.010160	49.582	48571.5	53543.4	262.865	80.98	89.56	427
620.000	.11672	8.568	.009820	51.293	50214.6	55355.2	265.836	83.06	91.62	433
640.000	.11301	8.849	.009503	53.001	51898.6	57207.8	268.776	85.10	93.63	440
660.000	.10954	9.129	.009206	54.705	53622.6	59100.2	271.688	87.08	95.60	446
680.000	.10627	9.410	.008927	56.406	55385.7	61031.5	274.571	89.02	97.53	453
700.000	.10320	9.690	.008665	58.104	57187.1	63001.0	277.425	90.92	99.41	459

Table 24. Continued.

ETHANE ISOBAR AT P = 7 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.461	21.684	.04612	30.9768	853.268	5320.4	5352.6	77.017	46.31	67.95	2040
100.000	21.337	.04687	28.3660	779.443	5970.2	6003.1	83.851	45.70	68.37	1969
110.000	20.973	.04768	25.8081	705.911	6654.7	6688.1	90.381	45.05	68.64	1891
120.000	20.606	.04853	23.4640	637.413	7341.8	7375.7	96.364	44.48	68.89	1811
130.000	20.236	.04942	21.3327	574.121	8031.5	8066.1	101.890	44.02	69.19	1732
140.000	19.862	.05035	19.3997	515.800	8724.6	8759.9	107.030	43.68	69.58	1652
150.000	19.484	.05133	17.6457	462.043	9422.1	9458.1	111.847	43.46	70.09	1574
160.000	19.098	.05236	16.0503	412.406	10125.5	10162.1	116.391	43.35	70.75	1496
170.000	18.705	.05345	14.5941	366.447	10836.1	10873.5	120.704	43.33	71.57	1418
180.000	18.301	.05464	13.2589	323.763	11555.9	11594.2	124.823	43.40	72.58	1341
190.000	17.885	.05591	12.0282	283.997	12286.8	12325.9	128.779	43.54	73.80	1265
200.000	17.453	.05730	10.8870	246.839	13031.0	13071.1	132.601	43.75	75.28	1188
210.000	17.001	.05882	9.8214	212.026	13791.5	13832.6	136.316	44.03	77.08	1111
220.000	16.524	.06052	8.8183	179.328	14571.7	14614.1	139.951	44.36	79.30	1032
229.984	16.015	.06244	7.8666	148.597	15375.4	15419.1	143.529	44.75	82.09	952
229.984	.42137	2.373	.040100	14.124	26353.3	28014.6	198.248	39.12	53.87	254
230.000	.42133	2.373	.040094	14.126	26356.3	28017.7	198.467	39.12	53.87	254
240.000	.39540	2.529	.036799	15.492	26780.3	28550.6	200.735	39.48	52.90	262
250.000	.37340	2.678	.034218	16.756	27203.3	29078.0	202.887	40.13	52.66	270
260.000	.35430	2.822	.032090	17.949	27629.4	29605.1	204.954	40.94	52.83	277
270.000	.33746	2.963	.030283	19.090	28061.1	30135.4	206.955	41.86	53.25	284
280.000	.32245	3.101	.028718	20.191	28499.9	30670.8	208.902	42.86	53.86	290
290.000	.30893	3.237	.027341	21.260	28947.1	31213.0	210.804	43.92	54.61	296
300.000	.29666	3.371	.026116	22.303	29403.6	31763.2	212.669	45.03	55.46	302
310.000	.28545	3.503	.025016	23.323	29870.1	32322.3	214.502	46.18	56.39	307
320.000	.27516	3.634	.024020	24.325	30347.2	32891.1	216.308	47.36	57.39	313
330.000	.26567	3.764	.023112	25.311	30835.3	33470.2	218.090	48.57	58.44	318
340.000	.25687	3.893	.022279	26.284	31334.8	34060.0	219.850	49.80	59.53	323
350.000	.24869	4.021	.021512	27.244	31846.1	34660.9	221.592	51.05	60.66	328
360.000	.24105	4.148	.020803	28.194	32369.3	35273.2	223.317	52.31	61.82	332
370.000	.23391	4.275	.020144	29.135	32904.7	35897.2	225.027	53.58	62.99	337
380.000	.22721	4.401	.019529	30.068	33452.3	36533.1	226.722	54.85	64.19	342
390.000	.22091	4.527	.018955	30.994	34012.3	37181.0	228.405	56.13	65.39	346
400.000	.21497	4.652	.018416	31.913	34584.7	37841.0	230.076	57.41	66.61	350
410.000	.20936	4.777	.017910	32.826	35169.6	38513.1	231.736	58.68	67.83	355
420.000	.20405	4.901	.017432	33.734	35766.9	39197.4	233.385	59.96	69.04	359
430.000	.19902	5.025	.016982	34.637	36376.6	39893.9	235.023	61.22	70.26	363
440.000	.19424	5.148	.016556	35.536	36998.8	40602.6	236.653	62.48	71.48	367
450.000	.18969	5.272	.016152	36.431	37633.2	41323.4	238.272	63.73	72.69	371
460.000	.18536	5.395	.015768	37.322	38279.9	42056.3	239.883	64.97	73.89	375
470.000	.18124	5.518	.015404	38.210	38938.8	42801.2	241.485	66.20	75.09	379
480.000	.17730	5.640	.015057	39.094	39609.8	43558.0	243.078	67.42	76.27	383
490.000	.17353	5.763	.014725	39.976	40292.6	44326.5	244.663	68.62	77.45	387
500.000	.16993	5.885	.014409	40.855	40987.4	45106.8	246.239	69.81	78.61	391
520.000	.16316	6.129	.013818	42.607	42411.9	46702.1	249.367	72.16	80.91	398
540.000	.15693	6.372	.013275	44.350	43882.2	48342.8	252.463	74.45	83.16	405
560.000	.15117	6.615	.012775	46.086	45397.4	50028.0	255.527	76.68	85.36	413
580.000	.14583	6.857	.012312	47.815	46956.5	51756.7	258.560	78.86	87.51	420
600.000	.14086	7.099	.011883	49.539	48558.3	53527.9	261.563	80.99	89.61	426
620.000	.13622	7.341	.011483	51.258	50202.0	55340.7	264.534	83.07	91.67	433
640.000	.13188	7.582	.011110	52.973	51886.6	57194.2	267.477	85.10	93.68	440
660.000	.12782	7.823	.010761	54.683	53611.1	59087.5	270.389	87.09	95.64	446
680.000	.12401	8.064	.010434	56.390	55374.7	61019.6	273.273	89.03	97.57	453

Table 24. Continued.

ETHANE ISOBAR AT P = 8 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.477	21.685	.04612	30.9773	853.535	5320.8	5357.6	77.021	46.32	67.95	2040
100.000	21.339	.04686	28.3717	779.866	5969.5	6006.9	83.843	45.70	68.37	1969
110.000	20.974	.04768	25.8143	706.354	6653.8	6691.9	90.373	45.05	68.64	1891
120.000	20.608	.04853	23.4705	637.869	7340.7	7379.5	96.356	44.48	68.88	1812
130.000	20.238	.04941	21.3394	574.588	8030.3	8069.9	101.880	44.03	69.18	1732
140.000	19.864	.05034	19.4067	516.275	8723.3	8763.6	107.021	43.69	69.57	1653
150.000	19.486	.05132	17.6529	462.526	9420.6	9461.7	111.837	43.47	70.08	1574
160.000	19.101	.05235	16.0578	412.895	10123.8	10165.6	116.381	43.35	70.74	1496
170.000	18.707	.05346	14.6019	366.944	10834.2	10877.0	120.693	43.33	71.56	1419
180.000	18.304	.05463	13.2670	324.269	11553.7	11597.4	124.811	43.40	72.56	1342
190.000	17.883	.05590	12.0366	284.514	12284.3	12329.0	128.766	43.55	73.78	1266
200.000	17.457	.05728	10.8958	247.369	13028.1	13074.0	132.586	43.76	75.25	1189
210.000	17.006	.05880	9.8307	212.571	13788.1	13835.2	136.300	44.03	77.04	1112
220.000	16.530	.06050	8.8284	179.891	14567.8	14616.2	139.933	44.36	79.25	1033
230.000	16.021	.06242	7.8761	149.135	15372.0	15421.9	143.515	44.76	82.03	953
234.018	15.805	.06327	7.5046	137.277	15703.5	15754.1	144.946	44.93	83.37	920
234.018	.48035	2.082	.046350	13.879	26439.2	28104.6	197.679	39.79	55.48	253
240.000	.46152	2.167	.043831	14.755	26702.5	28435.8	199.281	39.91	54.58	259
250.000	.43425	2.303	.040449	16.112	27135.3	28977.6	201.492	40.43	53.90	267
260.000	.41091	2.434	.037735	17.377	27568.7	29515.6	203.602	41.18	53.79	274
270.000	.39056	2.560	.035470	18.576	28006.2	30054.5	205.636	42.05	54.04	281
280.000	.37255	2.684	.033532	19.726	28449.7	30597.1	207.609	43.01	54.51	288
290.000	.35644	2.806	.031846	20.835	28900.9	31145.3	209.532	44.05	55.16	294
300.000	.34189	2.925	.030357	21.913	29360.7	31700.6	211.415	45.14	55.93	300
310.000	.32866	3.043	.029028	22.965	29830.1	32264.2	213.263	46.27	56.80	306
320.000	.31655	3.159	.027831	23.994	30309.7	32836.9	215.081	47.44	57.75	311
330.000	.30541	3.274	.026746	25.005	30800.0	33419.4	216.873	48.64	58.76	316
340.000	.29512	3.388	.025755	25.999	31301.5	34012.3	218.643	49.86	59.82	322
350.000	.28557	3.502	.024845	26.980	31814.6	34616.0	220.392	51.10	60.92	327
360.000	.27668	3.614	.024005	27.948	32339.4	35230.8	222.124	52.36	62.06	331
370.000	.26837	3.726	.023227	28.906	32876.2	35857.1	223.840	53.62	63.21	336
380.000	.26059	3.837	.022504	29.854	33425.1	36495.1	225.542	54.89	64.39	341
390.000	.25328	3.948	.021829	30.794	33986.3	37144.9	227.229	56.17	65.58	345
400.000	.24640	4.058	.021198	31.726	34559.8	37806.6	228.905	57.44	66.78	350
410.000	.23990	4.168	.020605	32.651	35145.7	38480.4	230.568	58.72	67.98	354
420.000	.23376	4.278	.020048	33.570	35744.0	39166.2	232.221	59.99	69.19	358
430.000	.22795	4.387	.019522	34.484	36354.6	39864.1	233.863	61.25	70.40	363
440.000	.22243	4.496	.019026	35.392	36977.5	40574.1	235.495	62.51	71.60	367
450.000	.21719	4.604	.018556	36.296	37612.8	41296.2	237.118	63.76	72.81	371
460.000	.21220	4.712	.018110	37.196	38260.2	42030.2	238.731	64.99	74.00	375
470.000	.20745	4.820	.017686	38.092	38919.7	42776.1	240.335	66.22	75.19	379
480.000	.20291	4.928	.017283	38.984	39591.3	43533.9	241.931	67.44	76.37	383
490.000	.19858	5.036	.016899	39.874	40274.8	44303.4	243.517	68.64	77.54	387
500.000	.19443	5.143	.016533	40.760	40970.1	45084.6	245.096	69.83	78.70	390
520.000	.18665	5.357	.015848	42.524	42395.6	46681.6	248.227	72.17	80.99	398
540.000	.17950	5.571	.015221	44.278	43866.8	48323.8	251.325	74.46	83.23	405
560.000	.17288	5.784	.014643	46.024	45382.9	50010.3	254.392	76.69	85.42	412
580.000	.16675	5.997	.014109	47.763	46942.7	51740.2	257.427	78.87	87.57	419
600.000	.16105	6.209	.013614	49.496	48545.2	53512.6	260.431	81.00	89.66	426
620.000	.15574	6.421	.013153	51.223	50189.5	55326.4	263.405	83.08	91.72	433
640.000	.15077	6.633	.012724	52.945	51874.6	57180.8	266.348	85.11	93.72	440
660.000	.14611	6.844	.012322	54.662	53599.7	59074.9	269.263	87.10	95.69	446
680.000	.14174	7.055	.011946	56.375	55363.8	61007.9	272.148	89.04	97.61	453
700.000	.13763	7.266	.011593	58.085	57166.1	62978.8	275.004	90.93	99.49	459

Table 24. Continued.

ETHANE ISOBAR AT P = 9 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.494	21.685	.04611	30.9779	853.803	5321.2	5362.7	77.025	46.32	67.95	2040
100.000	21.340	.04686	28.3774	780.289	5968.7	6010.8	83.835	45.70	68.36	1970
110.000	20.976	.04767	25.8204	706.797	6652.9	6695.8	90.354	45.05	68.64	1892
120.000	20.609	.04852	23.4769	638.326	7339.7	7383.4	96.347	44.48	68.88	1812
130.000	20.240	.04941	21.3462	575.055	8029.2	8073.6	101.871	44.03	69.17	1733
140.000	19.866	.05034	19.4137	516.750	8722.0	8767.3	107.011	43.69	69.56	1654
150.000	19.488	.05131	17.6601	463.007	9419.1	9465.3	111.827	43.47	70.08	1575
160.000	19.103	.05235	16.0653	413.385	10122.1	10169.2	116.370	43.36	70.73	1497
170.000	18.710	.05345	14.6096	367.442	10832.3	10880.4	120.682	43.34	71.55	1420
180.000	18.307	.05462	13.2750	324.776	11551.5	11600.7	124.798	43.41	72.55	1343
190.000	17.892	.05589	12.0450	285.030	12281.8	12332.1	128.752	43.55	73.76	1267
200.000	17.461	.05727	10.9046	247.898	13025.3	13076.8	132.572	43.76	75.23	1190
210.000	17.010	.05879	9.8400	213.115	13784.8	13837.7	136.284	44.03	77.01	1113
220.000	16.535	.06048	8.8384	180.454	14563.8	14618.3	139.915	44.37	79.20	1035
230.000	16.028	.06239	7.8870	149.721	15367.3	15423.4	143.494	44.76	81.96	954
237.697	15.609	.06407	7.1806	127.261	16006.6	16064.3	146.234	45.11	84.64	891
237.697	.53983	1.852	.052790	13.617	26513.8	28181.0	197.171	40.42	57.11	252
240.000	.53113	1.883	.051562	13.979	26619.7	28314.2	197.933	40.42	56.60	255
250.000	.49763	2.010	.047156	15.445	27064.1	28872.7	200.213	40.77	55.31	263
260.000	.46945	2.130	.043730	16.789	27505.9	29423.0	202.371	41.42	54.86	271
270.000	.44517	2.246	.040927	18.051	27949.7	29971.4	204.440	42.24	54.89	279
280.000	.42386	2.359	.038564	19.252	28398.4	30521.7	206.441	43.17	55.21	286
290.000	.40493	2.470	.036527	20.405	28853.7	31076.3	208.387	44.18	55.75	292
300.000	.38794	2.578	.034744	21.519	29317.1	31637.1	210.288	45.25	56.43	298
310.000	.37255	2.684	.033164	22.603	29789.5	32205.3	212.151	46.37	57.24	304
320.000	.35852	2.789	.031749	23.661	30271.8	32782.1	213.982	47.53	58.13	310
330.000	.34565	2.893	.030471	24.696	30764.4	33368.2	215.786	48.72	59.10	315
340.000	.33380	2.996	.029309	25.713	31268.0	33964.3	217.565	49.93	60.12	320
350.000	.32292	3.096	.028246	26.714	31782.9	34570.8	219.323	51.16	61.19	325
360.000	.31262	3.199	.027269	27.701	32309.3	35188.2	221.062	52.41	62.30	330
370.000	.30310	3.299	.026366	28.675	32847.6	35816.8	222.784	53.67	63.43	335
380.000	.29421	3.399	.025528	29.639	33397.9	36456.9	224.491	54.94	64.59	340
390.000	.28586	3.498	.024748	30.593	33960.3	37108.7	226.184	56.21	65.76	345
400.000	.27801	3.597	.024019	31.538	34534.9	37772.2	227.864	57.48	66.95	349
410.000	.27061	3.695	.023337	32.475	35121.8	38447.6	229.532	58.75	68.14	353
420.000	.26363	3.793	.022696	33.406	35721.1	39135.0	231.188	60.02	69.34	358
430.000	.25701	3.891	.022092	34.330	36332.6	39834.3	232.834	61.28	70.54	362
440.000	.25075	3.988	.021522	35.249	36956.3	40545.6	234.469	62.54	71.73	366
450.000	.24479	4.085	.020984	36.162	37592.3	41268.9	236.094	63.78	72.93	370
460.000	.23913	4.182	.020474	37.070	38240.5	42004.1	237.710	65.02	74.11	374
470.000	.23374	4.278	.019989	37.974	38900.7	42751.1	239.316	66.24	75.30	378
480.000	.22860	4.374	.019529	38.874	39572.9	43509.9	240.914	67.46	76.47	382
490.000	.22369	4.471	.019091	39.771	40256.9	44280.4	242.503	68.66	77.63	386
500.000	.21899	4.566	.018673	40.664	40952.8	45062.5	244.083	69.85	78.79	390
520.000	.21019	4.758	.017893	42.441	42379.3	46661.1	247.217	72.19	81.07	398
540.000	.20210	4.948	.017178	44.207	43851.5	48304.8	250.319	74.47	83.30	405
560.000	.19462	5.138	.016521	45.963	45368.4	49992.7	253.388	76.71	85.49	412
580.000	.18770	5.328	.015915	47.712	46928.9	51723.8	256.425	78.89	87.62	419
600.000	.18126	5.517	.015353	49.453	48532.1	53497.3	259.431	81.01	89.72	426
620.000	.17526	5.705	.014831	51.187	50177.0	55312.1	262.406	83.09	91.76	433
640.000	.16966	5.894	.014344	52.917	51862.7	57167.5	265.351	85.12	93.77	440
660.000	.16441	6.082	.013890	54.641	53588.3	59062.5	268.267	87.11	95.73	446
680.000	.15948	6.270	.013464	56.360	55352.9	60996.2	271.153	89.05	97.65	453
700.000	.15485	6.458	.013064	58.076	57155.7	62967.9	274.011	90.94	99.52	459

Table 24. Continued.

ETHANE ISOBAR AT P = 10 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.510	21.686	.04611	30.9785	854.070	5321.6	5367.7	77.030	46.32	67.95	2041
100.000	21.341	.04686	28.3830	780.712	5967.9	6014.7	83.827	45.71	68.36	1970
110.000	20.977	.04767	25.8265	707.240	6652.0	6699.7	90.356	45.06	68.63	1892
120.000	20.611	.04852	23.4834	638.782	7338.7	7387.2	96.338	44.49	68.88	1813
130.000	20.241	.04940	21.3529	575.521	8028.0	8077.4	101.862	44.03	69.17	1733
140.000	19.868	.05033	19.4207	517.224	8720.6	8771.0	107.002	43.69	69.56	1654
150.000	19.490	.05131	17.6674	463.489	9417.6	9468.9	111.817	43.47	70.07	1576
160.000	19.105	.05234	16.0727	413.874	10120.4	10172.7	116.359	43.36	70.72	1498
170.000	18.713	.05344	14.6173	367.939	10830.3	10883.8	120.670	43.34	71.53	1421
180.000	18.310	.05461	13.2830	325.281	11549.3	11604.0	124.786	43.41	72.53	1344
190.000	17.895	.05588	12.0533	285.547	12279.3	12335.2	128.739	43.55	73.74	1267
200.000	17.465	.05726	10.9133	248.427	13022.4	13079.7	132.557	43.76	75.20	1191
210.000	17.015	.05877	9.8493	213.659	13781.4	13840.2	136.268	44.04	76.97	1114
220.000	16.541	.06046	8.8484	181.016	14559.9	14620.4	139.897	44.37	79.15	1036
230.000	16.035	.06237	7.8979	150.306	15362.6	15425.0	143.473	44.77	81.89	956
240.000	15.485	.06458	6.9848	121.346	16196.3	16260.9	147.031	45.23	85.46	873
241.089	15.422	.06484	6.8869	118.289	16289.4	16354.3	147.419	45.28	85.92	863
241.089	.59991	1.667	.059430	13.342	26579.2	28246.1	196.709	41.02	58.75	252
250.000	.56386	1.773	.054411	14.751	26989.3	28762.8	199.018	41.15	56.93	260
260.000	.53011	1.886	.050116	16.185	27440.6	29327.0	201.231	41.70	56.05	268
270.000	.50140	1.994	.046681	17.514	27891.5	29885.9	203.340	42.45	55.82	276
280.000	.47647	2.099	.043827	18.769	28345.7	30444.5	205.371	43.34	55.96	283
290.000	.45447	2.200	.041396	19.968	28805.6	31006.0	207.341	44.32	56.37	290
300.000	.43484	2.300	.039286	21.121	29272.8	31572.5	209.262	45.37	56.96	296
310.000	.41715	2.397	.037429	22.238	29748.4	32145.6	211.141	46.47	57.69	303
320.000	.40109	2.493	.035776	23.324	30233.4	32726.6	212.985	47.61	58.53	308
330.000	.38640	2.588	.034291	24.386	30728.5	33316.5	214.800	48.79	59.45	314
340.000	.37291	2.682	.032946	25.426	31234.2	33915.8	216.589	50.00	60.44	319
350.000	.36044	2.774	.031720	26.447	31750.9	34525.3	218.356	51.22	61.47	324
360.000	.34888	2.866	.030596	27.453	32279.0	35145.4	220.102	52.47	62.55	329
370.000	.33812	2.958	.029560	28.444	32818.8	35776.4	221.831	53.72	63.66	334
380.000	.32807	3.048	.028601	29.423	33370.5	36418.6	223.544	54.98	64.80	339
390.000	.31866	3.138	.027711	30.392	33934.2	37072.4	225.242	56.25	65.95	344
400.000	.30981	3.228	.026881	31.350	34510.0	37737.7	226.926	57.52	67.12	348
410.000	.30149	3.317	.026104	32.300	35097.9	38414.8	228.598	58.79	68.30	353
420.000	.29363	3.406	.025376	33.242	35698.1	39103.7	230.258	60.05	69.49	357
430.000	.28621	3.494	.024692	34.176	36310.5	39804.5	231.907	61.31	70.67	361
440.000	.27917	3.582	.024046	35.105	36935.1	40517.1	233.545	62.56	71.86	366
450.000	.27250	3.670	.023437	36.027	37571.9	41241.6	235.173	63.81	73.05	370
460.000	.26615	3.757	.022860	36.944	38220.8	41978.0	236.792	65.04	74.23	374
470.000	.26012	3.844	.022313	37.857	38881.7	42726.1	238.401	66.27	75.40	378
480.000	.25436	3.931	.021794	38.765	39554.5	43485.9	240.000	67.48	76.57	382
490.000	.24886	4.018	.021300	39.668	40239.2	44257.4	241.591	68.68	77.73	386
500.000	.24361	4.105	.020829	40.568	40935.6	45040.4	243.173	69.87	78.88	390
520.000	.23378	4.278	.019951	42.358	42363.1	46640.7	246.311	72.20	81.15	397
540.000	.22474	4.450	.019148	44.135	43836.2	48285.9	249.415	74.49	83.37	405
560.000	.21640	4.621	.018411	45.902	45353.9	49975.1	252.487	76.72	85.55	412
580.000	.20867	4.792	.017731	47.660	46915.2	51707.5	255.526	78.90	87.68	419
600.000	.20149	4.963	.017101	49.410	48519.1	53482.0	258.534	81.02	89.77	426
620.000	.19481	5.135	.016516	51.152	50164.6	55297.9	261.511	83.10	91.81	433
640.000	.18856	5.303	.015971	52.889	51850.9	57154.2	264.457	85.13	93.81	440
660.000	.18271	5.473	.015463	54.619	53577.1	59050.1	267.374	87.12	95.77	446
680.000	.17723	5.642	.014986	56.345	55342.1	60984.6	270.262	89.05	97.68	453
700.000	.17207	5.812	.014539	58.067	57145.3	62957.0	273.120	90.95	99.56	459

Table 24. Continued.

ETHANE ISOBAR AT P = 11 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.526	21.686	.04611	30.9791	854.338	5322.0	5372.7	77.034	46.32	67.94	2041
100.000	21.343	.04685	28.3887	781.135	5967.1	6018.6	83.819	45.71	68.36	1971
110.000	20.978	.04767	25.8326	707.682	6651.1	6703.5	90.348	45.06	68.63	1893
120.000	20.612	.04851	23.4899	639.239	7337.6	7391.0	96.330	44.49	68.87	1814
130.000	20.243	.04940	21.3597	575.987	8026.8	8081.2	101.853	44.03	69.16	1734
140.000	19.870	.05033	19.4277	517.699	8719.3	8774.7	106.992	43.70	69.55	1655
150.000	19.492	.05130	17.6746	463.971	9416.1	9472.6	111.807	43.48	70.06	1576
160.000	19.108	.05233	16.0802	414.363	10118.7	10176.2	116.349	43.36	70.71	1499
170.000	18.715	.05343	14.6250	368.435	10828.4	10887.2	120.659	43.34	71.52	1421
180.000	18.313	.05461	13.2910	325.787	11547.2	11607.2	124.774	43.41	72.51	1345
190.000	17.899	.05587	12.0617	286.063	12276.8	12338.2	128.726	43.56	73.72	1268
200.000	17.469	.05724	10.9221	248.955	13019.5	13082.5	132.543	43.77	75.17	1192
210.000	17.026	.05876	9.8586	214.202	13778.1	13842.7	136.252	44.04	76.94	1115
220.000	16.546	.06044	8.8583	181.578	14556.0	14622.5	139.879	44.38	79.10	1037
230.000	16.041	.06234	7.9088	150.890	15357.9	15426.5	143.453	44.77	81.82	957
240.000	15.494	.06454	6.9969	121.959	16190.6	16261.6	147.007	45.23	85.36	874
244.242	15.245	.06560	6.6178	110.173	16555.5	16627.6	148.518	45.45	87.23	838
244.242	.66068	1.514	.066280	13.056	26636.7	28301.7	196.284	41.60	60.43	251
250.000	.63336	1.579	.062311	14.027	26910.3	28647.0	197.886	41.59	58.84	256
260.000	.59311	1.686	.056943	15.561	27372.5	29227.2	200.161	41.99	57.39	265
270.000	.55941	1.788	.052760	16.965	27831.4	29797.7	202.314	42.68	56.83	274
280.000	.53045	1.885	.049342	18.278	28291.7	30365.4	204.379	43.52	56.77	281
290.000	.50512	1.980	.046466	19.524	28756.5	30934.2	206.374	44.46	57.03	288
300.000	.48265	2.072	.043992	20.718	29227.7	31506.8	208.315	45.49	57.52	295
310.000	.46250	2.162	.041831	21.869	29706.7	32085.1	210.211	46.57	58.17	301
320.000	.44427	2.251	.039919	22.986	30194.6	32670.5	212.070	47.70	58.94	307
330.000	.42768	2.338	.038209	24.073	30692.1	33264.2	213.896	48.87	59.81	313
340.000	.41246	2.424	.036667	25.137	31200.0	33866.9	215.696	50.07	60.76	318
350.000	.39844	2.510	.035267	26.179	31718.7	34479.4	217.471	51.28	61.76	323
360.000	.38547	2.594	.033987	27.204	32248.6	35102.2	219.225	52.52	62.81	328
370.000	.37342	2.678	.032811	28.213	32789.9	35735.7	220.961	53.77	63.89	333
380.000	.36218	2.761	.031726	29.207	33343.0	36380.2	222.679	55.03	65.01	338
390.000	.35167	2.844	.030719	30.190	33908.0	37035.9	224.383	56.29	66.15	343
400.000	.34181	2.926	.029783	31.162	34484.9	37703.1	226.072	57.55	67.30	348
410.000	.33253	3.007	.028908	32.124	35074.0	38381.9	227.748	58.82	68.46	352
420.000	.32379	3.088	.028090	33.077	35675.1	39072.4	229.412	60.08	69.64	357
430.000	.31553	3.169	.027321	34.023	36288.5	39774.6	231.064	61.34	70.81	361
440.000	.30772	3.250	.026597	34.961	36913.9	40488.6	232.705	62.59	71.99	365
450.000	.30031	3.330	.025915	35.893	37551.5	41214.4	234.336	63.83	73.17	369
460.000	.29327	3.410	.025269	36.819	38201.1	41951.9	235.957	65.06	74.34	374
470.000	.28657	3.490	.024658	37.739	38862.6	42701.1	237.569	66.29	75.51	378
480.000	.28019	3.569	.024078	38.655	39536.1	43462.0	239.170	67.50	76.67	382
490.000	.27411	3.648	.023527	39.566	40221.4	44234.4	240.763	68.70	77.82	386
500.000	.26829	3.727	.023002	40.472	40918.3	45018.3	242.347	69.89	78.97	389
520.000	.25741	3.885	.022024	42.275	42346.9	46620.3	245.488	72.22	81.23	397
540.000	.24741	4.042	.021131	44.064	43821.0	48267.0	248.595	74.50	83.44	405
560.000	.23820	4.198	.020311	45.841	45339.5	49957.6	251.669	76.73	85.61	412
580.000	.22966	4.354	.019556	47.608	46901.5	51691.2	254.711	78.91	87.74	419
600.000	.22174	4.510	.018857	49.366	48506.1	53466.9	257.720	81.03	89.82	426
620.000	.21436	4.665	.018209	51.117	50152.3	55283.8	260.699	83.11	91.86	433
640.000	.20748	4.820	.017605	52.861	51839.2	57141.0	263.647	85.14	93.86	440
660.000	.20103	4.974	.017042	54.598	53565.8	59037.7	266.565	87.12	95.81	446
680.000	.19498	5.129	.016514	56.330	55331.4	60973.1	269.454	89.06	97.72	453
700.000	.18929	5.283	.016020	58.057	57135.0	62946.2	272.314	90.96	99.59	459

Table 24. Continued.

Table 24. Continued.

ETHANE ISOBAR AT P = 12 BAR

T	DEN	VOL	DP/DT	DP/DD	E	H	S	CV	CP	W
DEG K	MOL/L	L/MOL	BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
90.542	21.687	.04611	30.9795	854.598	5322.4	5377.7	77.039	46.32	67.94	2041
100.000	21.344	.04685	28.3944	781.558	5966.3	6022.5	83.611	45.71	68.36	1971
110.000	20.980	.04766	25.8388	708.125	6650.2	6707.4	90.340	45.06	68.63	1893
120.000	20.614	.04851	23.4964	639.695	7336.6	7394.8	96.321	44.49	68.87	1814
130.000	20.245	.04940	21.3664	576.453	8025.6	8084.9	101.844	44.04	69.16	1735
140.000	19.872	.05032	19.4347	518.173	8718.0	8778.4	106.983	43.70	69.54	1655
150.000	19.494	.05130	17.6818	464.452	9414.6	9476.2	111.797	43.48	70.05	1577
160.000	19.110	.05233	16.0877	414.852	10117.0	10179.8	116.338	43.37	70.70	1499
170.000	18.718	.05342	14.6327	368.932	10826.5	10890.6	120.648	43.35	71.51	1422
180.000	18.316	.05460	13.2990	326.293	11545.0	11610.5	124.762	43.42	72.50	1346
190.000	17.902	.05586	12.0700	286.579	12274.3	12341.3	128.713	43.56	73.70	1269
200.000	17.473	.05723	10.9309	249.483	13016.7	13085.4	132.529	43.77	75.15	1193
210.000	17.024	.05874	9.8679	214.745	13774.8	13845.3	136.236	44.05	76.90	1116
220.000	16.552	.06042	8.8683	182.139	14552.1	14624.6	139.862	44.38	79.05	1038
230.000	16.048	.06231	7.9196	151.474	15353.3	15428.1	143.433	44.77	81.75	959
240.000	15.502	.06451	7.0096	122.572	16184.9	16262.4	146.983	45.23	85.26	876
247.192	15.074	.06634	6.3692	102.773	16807.4	16887.0	149.547	45.62	88.56	814
247.192	.72220	1.385	.073350	12.761	26637.6	28349.2	195.888	42.16	62.14	250
250.000	.70664	1.415	.070986	13.268	26826.3	28524.5	196.798	42.10	61.11	253
260.000	.65873	1.518	.064269	14.917	27301.4	29123.1	199.146	42.32	58.91	262
270.000	.61935	1.615	.059196	16.402	27769.2	29706.7	201.348	42.91	57.95	271
280.000	.58592	1.707	.055128	17.778	28236.2	30284.3	203.448	43.70	57.64	279
290.000	.55693	1.796	.051748	19.074	28706.2	30860.9	205.472	44.61	57.74	286
300.000	.53139	1.882	.048870	20.310	29181.7	31439.9	207.434	45.61	58.11	293
310.000	.50862	1.966	.046375	21.497	29664.3	32023.6	209.348	46.68	58.67	299
320.000	.48811	2.049	.044180	22.644	30155.2	32613.7	211.221	47.79	59.37	305
330.000	.46949	2.130	.042228	23.759	30655.4	33211.4	213.060	48.95	60.19	311
340.000	.45247	2.210	.040475	24.846	31165.6	33817.6	214.870	50.14	61.09	317
350.000	.43684	2.289	.038889	25.910	31686.3	34433.3	216.654	51.35	62.05	322
360.000	.42240	2.367	.037444	26.954	32217.9	35058.8	218.417	52.58	63.07	327
370.000	.40901	2.445	.036120	27.980	32760.9	35694.8	220.159	53.82	64.13	332
380.000	.39655	2.522	.034901	28.991	33315.4	36341.5	221.884	55.07	65.23	337
390.000	.38496	2.598	.033773	29.988	33881.6	36999.3	223.592	56.33	66.34	342
400.000	.37406	2.674	.032726	30.974	34459.8	37668.4	225.286	57.59	67.48	347
410.000	.36375	2.749	.031749	31.948	35049.9	38348.9	226.966	58.85	68.63	351
420.000	.35410	2.824	.030837	32.913	35652.1	39041.0	228.634	60.11	69.79	356
430.000	.34499	2.899	.029981	33.869	36266.4	39744.7	230.290	61.37	70.96	360
440.000	.33638	2.973	.029176	34.817	36892.7	40460.1	231.934	62.62	72.12	365
450.000	.32822	3.047	.028418	35.758	37531.0	41187.1	233.568	63.86	73.29	369
460.000	.32047	3.120	.027702	36.693	38181.4	41925.8	235.192	65.09	74.45	373
470.000	.31311	3.194	.027024	37.622	38843.6	42676.1	236.805	66.31	75.61	377
480.000	.30610	3.267	.026382	38.545	39517.7	43438.0	238.409	67.52	76.77	381
490.000	.29941	3.340	.025772	39.463	40203.6	44211.4	240.004	68.72	77.92	385
500.000	.29303	3.413	.025192	40.377	40901.2	44996.3	241.590	69.90	79.06	389
520.000	.28109	3.558	.024111	42.192	42330.8	46599.9	244.734	72.24	81.30	397
540.000	.27013	3.702	.023126	43.992	43805.8	48248.1	247.844	74.52	83.51	404
560.000	.26002	3.846	.022222	45.780	45325.1	49940.1	250.921	76.74	85.68	412
580.000	.25068	3.989	.021391	47.556	46887.9	51674.9	253.964	78.92	87.80	419
600.000	.24201	4.132	.020622	49.323	48493.2	53451.7	256.976	81.05	89.88	426
620.000	.23393	4.275	.019909	51.082	50140.0	55269.7	259.956	83.12	91.91	433
640.000	.22640	4.417	.019245	52.833	51827.4	57127.8	262.906	85.15	93.90	440
660.000	.21935	4.559	.018627	54.577	53554.6	59025.4	265.825	87.13	95.85	446
680.000	.21273	4.701	.018048	56.315	55320.7	60961.6	268.715	89.07	97.76	453
700.000	.20651	4.842	.017505	58.048	57124.8	62935.5	271.576	90.96	99.63	459

Table 24. Continued.

ETHANE ISOBAR AT P = 13 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.558	21.688	.04611	30.9801	854.865	5322.8	5382.7	77.043	46.32	67.94	2041
100.000	21.345	.04685	28.4001	781.980	5965.5	6026.4	83.803	45.71	68.35	1971
110.000	20.981	.04766	25.8449	708.568	6649.3	6711.2	90.331	45.07	68.62	1894
120.000	20.615	.04851	23.5028	640.151	7335.6	7398.6	96.312	44.50	68.86	1815
130.000	20.247	.04939	21.3732	576.919	8024.5	8088.7	101.835	44.04	69.15	1735
140.000	19.874	.05032	19.4417	518.647	8716.7	8782.1	106.973	43.70	69.54	1656
150.000	19.497	.05129	17.6890	464.934	9413.2	9479.8	111.787	43.48	70.04	1578
160.000	19.113	.05232	16.0951	415.340	10115.3	10183.3	116.327	43.37	70.69	1500
170.000	18.721	.05342	14.6404	369.428	10824.6	10894.0	120.636	43.35	71.49	1423
180.000	18.319	.05459	13.3076	326.798	11542.8	11613.8	124.750	43.42	72.48	1346
190.000	17.906	.05585	12.0783	287.094	12271.8	12344.4	128.700	43.56	73.68	1270
200.000	17.477	.05722	10.9396	250.011	13013.8	13088.2	132.514	43.78	75.12	1194
210.000	17.029	.05872	9.8772	215.287	13771.5	13847.8	136.220	44.05	76.87	1117
220.000	16.557	.06040	8.8782	182.699	14548.2	14626.8	139.844	44.38	79.01	1039
230.000	16.054	.06229	7.9305	152.056	15348.7	15429.6	143.412	44.78	81.69	960
240.000	15.510	.06447	7.0210	123.183	16179.3	16263.1	146.959	45.24	85.16	878
249.969	14.909	.06707	6.1377	95.981	17047.3	17134.5	150.516	45.78	89.92	791
249.969	.78456	1.275	.080650	12.460	26732.5	28389.4	195.516	42.71	63.91	249
250.000	.78435	1.275	.080617	12.466	26736.4	28393.8	195.738	42.71	63.90	249
260.000	.72731	1.375	.072168	14.250	27226.9	29014.3	198.171	42.69	60.65	259
270.000	.68141	1.468	.066028	15.825	27704.7	29612.5	200.429	43.17	59.19	268
280.000	.64299	1.555	.061208	17.268	28179.1	30200.9	202.569	43.90	58.59	276
290.000	.61000	1.639	.057259	18.618	28654.8	30786.0	204.622	44.77	58.50	284
300.000	.58114	1.721	.053931	19.897	29134.8	31371.8	206.608	45.74	58.73	291
310.000	.55555	1.800	.051068	21.121	29621.2	31961.2	208.540	46.79	59.19	298
320.000	.53261	1.878	.048566	22.300	30115.3	32556.1	210.429	47.89	59.82	304
330.000	.51186	1.954	.046352	23.443	30618.2	33158.0	212.281	49.03	60.57	310
340.000	.49296	2.029	.044373	24.555	31130.8	33767.9	214.101	50.21	61.43	316
350.000	.47564	2.102	.042589	25.640	31653.5	34386.7	215.895	51.41	62.35	321
360.000	.45968	2.175	.040969	26.704	32187.0	35015.1	217.665	52.63	63.34	326
370.000	.44496	2.246	.039489	27.748	32731.6	35653.6	219.414	53.87	64.37	332
380.000	.43117	2.319	.038129	28.775	33287.6	36302.7	221.145	55.12	65.44	337
390.000	.41836	2.390	.036874	29.786	33855.2	36962.6	222.859	56.37	66.54	341
400.000	.40638	2.461	.035710	30.785	34434.6	37633.6	224.558	57.63	67.66	346
410.000	.39514	2.531	.034628	31.772	35025.8	38315.8	226.243	58.89	68.80	351
420.000	.38456	2.600	.033617	32.749	35629.0	39009.5	227.914	60.14	69.95	355
430.000	.37459	2.670	.032671	33.715	36244.2	39714.7	229.573	61.40	71.10	360
440.000	.36516	2.739	.031783	34.674	36871.4	40431.5	231.221	62.64	72.26	364
450.000	.35624	2.807	.030947	35.624	37510.6	41159.8	232.858	63.88	73.41	368
460.000	.34777	2.875	.030158	36.568	38161.6	41899.7	234.484	65.11	74.57	373
470.000	.33973	2.943	.029412	37.505	38824.6	42651.1	236.100	66.33	75.72	377
480.000	.33208	3.011	.028706	38.436	39499.4	43414.1	237.706	67.54	76.87	381
490.000	.32479	3.079	.028035	39.361	40185.9	44188.5	239.303	68.74	78.01	385
500.000	.31783	3.146	.027398	40.282	40884.0	44974.3	240.890	69.92	79.15	389
520.000	.30481	3.281	.026213	42.109	42314.7	46579.6	244.038	72.25	81.39	397
540.000	.29288	3.414	.025133	43.921	43790.6	48229.3	247.151	74.53	83.59	404
560.000	.28188	3.548	.024144	45.719	45310.8	49922.6	250.230	76.76	85.74	412
580.000	.27172	3.680	.023235	47.505	46874.3	51658.7	253.276	78.93	87.86	419
600.000	.26229	3.813	.022395	49.281	48480.3	53436.6	256.289	81.06	89.93	426
620.000	.25352	3.945	.021616	51.047	50127.7	55255.6	259.271	83.13	91.96	433
640.000	.24533	4.076	.020892	52.805	51815.7	57114.7	262.223	85.16	93.95	440
660.000	.23767	4.207	.020217	54.556	53543.5	59013.2	265.143	87.14	95.89	446
680.000	.23049	4.338	.019586	56.300	55310.0	60950.1	268.034	89.08	97.80	453
700.000	.22374	4.469	.018995	58.039	57114.5	62924.8	270.896	90.97	99.66	459

Table 24. Continued.

ETHANE ISOBAR AT P = 14 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.574	21.688	.04611	30.9807	855.131	5323.2	5387.7	77.048	46.33	67.94	2042
100.000	21.346	.04685	28.4057	782.402	5964.7	6030.3	83.795	45.72	68.35	1972
110.000	20.983	.04766	25.8510	709.010	6648.3	6715.1	90.323	45.07	68.62	1894
120.000	20.617	.04850	23.5093	640.607	7334.5	7402.4	96.304	44.50	68.86	1815
130.000	20.248	.04939	21.3799	577.385	8023.3	8092.4	101.826	44.04	69.15	1736
140.000	19.876	.05031	19.4486	519.121	8715.3	8785.8	106.964	43.71	69.53	1657
150.000	19.499	.05129	17.6962	465.415	9411.7	9483.5	111.777	43.49	70.03	1578
160.000	19.115	.05231	16.1026	415.828	10113.6	10186.8	116.317	43.37	70.68	1501
170.000	18.724	.05341	14.6481	369.924	10822.7	10897.5	120.625	43.36	71.48	1424
180.000	18.322	.05458	13.3149	327.303	11540.6	11617.0	124.738	43.42	72.47	1347
190.000	17.909	.05584	12.0866	287.609	12269.3	12347.5	128.687	43.57	73.66	1271
200.000	17.481	.05721	10.9483	250.538	13011.0	13091.1	132.500	43.78	75.09	1195
210.000	17.034	.05871	9.8864	215.829	13768.2	13850.4	136.204	44.05	76.83	1118
220.000	16.563	.06038	8.8881	183.258	14544.4	14628.9	139.826	44.39	78.96	1041
230.000	16.061	.06226	7.9413	152.638	15344.0	15431.2	143.392	44.78	81.62	961
240.000	15.518	.06444	7.0330	123.793	16173.7	16263.9	146.935	45.24	85.07	879
250.000	14.918	.06703	6.1488	96.547	17043.0	17136.8	150.498	45.79	89.78	793
252.595	14.750	.06780	5.9210	89.714	17276.8	17371.7	151.433	45.95	91.32	770
252.595	.84782	1.180	.088189	12.153	26772.1	28423.4	195.163	43.25	65.74	247
260.000	.79924	1.251	.080733	13.556	27148.3	28900.0	197.227	43.10	62.67	256
270.000	.74581	1.341	.073303	15.232	27637.7	29514.9	199.548	43.45	60.57	265
280.000	.70179	1.425	.067608	16.749	28120.2	30115.1	201.731	44.11	59.62	274
290.000	.66438	1.505	.063014	18.155	28602.1	30709.3	203.816	44.94	59.30	282
300.000	.63193	1.582	.059184	19.480	29087.1	31302.5	205.827	45.88	59.39	289
310.000	.60332	1.657	.055917	20.742	29577.4	31897.9	207.779	46.90	59.74	296
320.000	.57780	1.731	.053081	21.954	30074.9	32497.8	209.683	47.98	60.28	302
330.000	.55481	1.802	.050585	23.125	30580.6	33104.0	211.548	49.11	60.98	308
340.000	.53393	1.873	.048364	24.262	31095.6	33717.7	213.380	50.28	61.78	314
350.000	.51485	1.942	.046369	25.370	31620.5	34339.8	215.184	51.47	62.66	320
360.000	.49730	2.011	.044564	26.453	32155.9	34971.1	216.962	52.69	63.62	325
370.000	.48109	2.079	.042918	27.515	32702.2	35612.3	218.718	53.92	64.62	331
380.000	.46605	2.146	.041411	28.558	33259.7	36263.7	220.456	55.16	65.67	336
390.000	.45205	2.212	.040022	29.585	33828.7	36925.7	222.175	56.41	66.75	341
400.000	.43896	2.278	.038738	30.597	34409.3	37598.6	223.879	57.67	67.85	346
410.000	.42670	2.344	.037545	31.596	35001.7	38282.7	225.568	58.92	68.97	350
420.000	.41517	2.409	.036432	32.584	35605.9	38978.0	227.243	60.18	70.10	355
430.000	.40431	2.473	.035393	33.562	36222.0	39684.7	228.906	61.43	71.24	359
440.000	.39406	2.538	.034418	34.530	36850.1	40402.8	230.557	62.67	72.39	364
450.000	.38436	2.602	.033501	35.490	37490.1	41132.5	232.197	63.91	73.54	368
460.000	.37517	2.665	.032637	36.442	38141.9	41873.6	233.825	65.13	74.69	372
470.000	.36644	2.729	.031821	37.388	38805.6	42626.1	235.444	66.35	75.83	376
480.000	.35813	2.792	.031049	38.326	39481.0	43390.1	237.052	67.56	76.97	381
490.000	.35023	2.855	.030317	39.259	40168.1	44165.5	238.651	68.76	78.11	385
500.000	.34268	2.918	.029621	40.187	40866.8	44952.2	240.240	69.94	79.24	389
520.000	.32858	3.043	.028329	42.027	42298.5	46559.3	243.392	72.27	81.47	396
540.000	.31566	3.168	.027153	43.850	43775.4	48210.5	246.507	74.55	83.66	404
560.000	.30377	3.292	.026077	45.658	45296.5	49905.2	249.589	76.77	85.81	411
580.000	.29278	3.416	.025088	47.454	46860.8	51642.5	252.637	78.94	87.92	419
600.000	.28259	3.539	.024176	49.238	48467.4	53421.6	255.652	81.07	89.99	426
620.000	.27311	3.661	.023331	51.012	50115.5	55241.6	258.636	83.14	92.01	433
640.000	.26427	3.784	.022546	52.777	51804.1	57101.6	261.589	85.17	93.99	440
660.000	.25601	3.906	.021814	54.535	53532.3	59000.9	264.511	87.15	95.94	446
680.000	.24826	4.028	.021130	56.285	55299.4	60938.7	267.403	89.09	97.84	453
700.000	.24097	4.150	.020490	58.030	57104.4	62914.1	270.266	90.98	99.70	459

ETHANE ISOBAR AT P = 15 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.591	21.689	.04611	30.9812	855.398	5323.6	5392.7	77.052	46.33	67.94	2042
100.000	21.348	.04684	28.4114	782.825	5963.9	6034.2	83.787	45.72	68.35	1972
110.000	20.984	.04766	25.8571	709.452	6647.4	6718.9	90.315	45.07	68.61	1895
120.000	20.618	.04850	23.5157	641.063	7333.5	7406.2	96.295	44.50	68.85	1816
130.000	20.250	.04938	21.3866	577.851	8022.1	8096.2	101.817	44.05	69.14	1736
140.000	19.878	.05031	19.4556	519.594	8714.0	8789.5	106.954	43.71	69.52	1657
150.000	19.501	.05128	17.7034	465.896	9410.2	9487.1	111.767	43.49	70.02	1579
160.000	19.117	.05231	16.1100	416.317	10111.9	10190.4	116.306	43.38	70.67	1501
170.000	18.726	.05340	14.6558	370.420	10820.8	10900.9	120.614	43.36	71.47	1424
180.000	18.325	.05457	13.3229	327.807	11538.5	11620.3	124.726	43.43	72.45	1348
190.000	17.913	.05583	12.0949	288.124	12266.9	12350.6	128.674	43.57	73.64	1272
200.000	17.485	.05719	10.9570	251.065	13008.1	13093.9	132.486	43.78	75.07	1196
210.000	17.038	.05869	9.8956	216.370	13764.9	13852.9	136.189	44.06	76.80	1119
220.000	16.568	.06036	8.8980	183.817	14540.5	14631.1	139.808	44.39	78.91	1042
230.000	16.067	.06224	7.9520	153.218	15339.5	15432.8	143.372	44.79	81.55	963
240.000	15.526	.06441	7.0450	124.401	16168.1	16264.7	146.912	45.25	84.97	881
250.000	14.928	.06699	6.1625	97.193	17035.9	17136.4	150.469	45.79	89.62	795
255.087	14.594	.06852	5.7170	83.903	17497.2	17599.9	152.305	46.11	92.76	749
255.087	.91204	1.096	.095980	11.841	26807.0	28451.6	194.826	43.77	67.63	246
260.000	.87503	1.143	.090088	12.832	27065.2	28779.4	196.304	43.56	65.04	252
270.000	.81280	1.230	.081073	14.622	27567.9	29413.4	198.696	43.75	62.12	262
280.000	.76246	1.312	.074357	16.218	28059.5	30026.8	200.927	44.33	60.75	271
290.000	.72019	1.389	.069030	17.684	28548.1	30630.9	203.047	45.11	60.17	280
300.000	.68383	1.462	.064641	19.058	29038.3	31231.8	205.084	46.02	60.08	287
310.000	.65198	1.534	.060930	20.360	29532.9	31833.6	207.057	47.01	60.31	294
320.000	.62371	1.603	.057730	21.606	30033.8	32438.8	208.978	48.08	60.77	301
330.000	.59835	1.671	.054930	22.806	30542.6	33049.4	210.857	49.20	61.39	307
340.000	.57540	1.738	.052450	23.968	31060.1	33667.0	212.701	50.35	62.14	313
350.000	.55447	1.804	.050230	25.098	31587.2	34292.5	214.514	51.54	62.98	319
360.000	.53528	1.868	.048229	26.201	32124.6	34926.8	216.301	52.75	63.90	324
370.000	.51759	1.932	.046410	27.281	32672.6	35570.6	218.064	53.97	64.88	330
380.000	.50120	1.995	.044747	28.341	33231.6	36224.4	219.808	55.21	65.90	335
390.000	.48597	2.058	.043219	29.383	33802.0	36888.6	221.533	56.46	66.95	340
400.000	.47175	2.120	.041808	30.409	34383.9	37563.5	223.242	57.71	68.04	345
410.000	.45843	2.181	.040500	31.421	34977.4	38249.4	224.935	58.96	69.14	350
420.000	.44594	2.242	.039282	32.421	35582.7	38946.4	226.615	60.21	70.26	354
430.000	.43418	2.303	.038145	33.409	36199.8	39654.6	228.281	61.46	71.39	359
440.000	.42308	2.364	.037081	34.387	36828.7	40374.1	229.935	62.70	72.53	363
450.000	.41259	2.424	.036081	35.357	37469.5	41105.1	231.578	63.93	73.67	368
460.000	.40266	2.484	.035140	36.318	38122.1	41847.4	233.209	65.16	74.80	372
470.000	.39323	2.543	.034252	37.271	38786.5	42601.1	234.830	66.37	75.94	376
480.000	.38426	2.602	.033412	38.217	39462.6	43366.2	236.441	67.58	77.08	380
490.000	.37573	2.661	.032616	39.158	40150.3	44142.6	238.042	68.77	78.20	384
500.000	.36759	2.720	.031861	40.092	40849.6	44930.2	239.633	69.96	79.33	388
520.000	.35240	2.838	.030460	41.945	42282.4	46538.9	242.788	72.28	81.55	396
540.000	.33849	2.954	.029186	43.779	43760.2	48191.7	245.906	74.56	83.73	404
560.000	.32569	3.070	.028021	45.598	45282.1	49887.8	248.990	76.78	85.87	411
580.000	.31387	3.186	.026952	47.403	46847.2	51626.4	252.040	78.96	87.98	419
600.000	.30291	3.301	.025966	49.195	48454.6	53406.6	255.058	81.08	90.04	426
620.000	.29272	3.416	.025053	50.977	50103.3	55227.6	258.043	83.15	92.06	433
640.000	.28323	3.531	.024206	52.750	51792.4	57088.6	260.997	85.18	94.04	440
660.000	.27435	3.645	.023417	54.514	53521.2	58988.8	263.921	87.16	95.98	446
680.000	.26602	3.759	.022680	56.271	55288.8	60927.3	266.814	89.09	97.88	453
700.000	.25821	3.873	.021989	58.021	57094.2	62903.5	269.678	90.99	99.73	459

ETHANE ISOBAR AT P = 15 BAR

ETHANE ISOBAR AT P = 16 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.607	21.689	.04611	30.9818	855.665	5324.0	5397.7	77.056	46.33	67.94	2042
100.000	21.349	.04684	28.4171	783.247	5963.1	6038.0	83.779	45.72	68.34	1973
110.000	20.985	.04765	25.8632	709.694	6646.5	6722.8	90.306	45.07	68.61	1895
120.000	20.620	.04850	23.5222	641.518	7332.5	7410.1	96.286	44.51	68.85	1816
130.000	20.252	.04938	21.3934	578.317	8021.(	8100.0	101.808	44.05	69.14	1737
140.000	19.880	.05030	19.4626	520.068	8712.7	8793.2	106.945	43.71	69.52	1658
150.000	19.503	.05127	17.7107	466.377	9408.7	9490.7	111.757	43.49	70.02	1580
160.000	19.120	.05230	16.1174	416.805	10110.2	10193.9	116.296	43.38	70.66	1502
170.000	18.729	.05339	14.6635	370.916	10818.9	10904.3	120.602	43.36	71.46	1+25
180.000	18.329	.05456	13.3309	328.312	11536.3	11623.6	124.713	43.43	72.43	1349
190.000	17.916	.05582	12.1032	288.638	12264.4	12353.7	128.660	43.57	73.62	1273
200.000	17.489	.05718	10.9657	251.591	13005.3	13096.8	132.472	43.79	75.04	1197
210.000	17.043	.05868	9.9048	216.911	13761.6	13855.5	136.173	44.06	76.76	1121
220.000	16.574	.06034	8.9079	184.376	14536.7	14633.2	139.791	44.40	78.86	1043
230.000	16.074	.06221	7.9628	153.798	15334.9	15434.4	143.352	44.79	81.49	964
240.000	15.534	.06437	7.0569	125.009	16162.5	16265.5	146.888	45.25	84.87	883
250.000	14.938	.06694	6.1761	97.838	17028.9	17136.0	150.441	45.80	89.47	797
257.462	14.442	.06924	5.5240	78.495	17710.3	17821.1	153.141	46.93	94.92	726
257.462	.97732	1.023	.104034	11.525	26837.4	28474.6	194.503	44.29	69.60	245
260.000	.95534	1.047	.100397	12.072	26976.5	28651.3	195.391	44.11	67.90	246
270.000	.88273	1.133	.089407	13.993	27494.9	29307.6	197.867	44.08	63.88	259
280.000	.82517	1.212	.081490	15.675	27996.7	29935.7	200.152	44.56	61.98	269
290.000	.77751	1.286	.075327	17.207	28492.7	30550.5	202.309	45.29	61.11	277
300.000	.73690	1.357	.070315	18.631	28988.5	31159.7	204.374	46.16	60.82	285
310.000	.70157	1.425	.066115	19.974	29487.5	31768.2	206.369	47.13	60.92	293
320.000	.67038	1.492	.062520	21.255	29992.2	32378.9	208.308	48.18	61.28	299
330.000	.64251	1.556	.059392	22.485	30504.0	32994.2	210.201	49.28	61.82	306
340.000	.61738	1.620	.056634	23.673	31024.2	33615.8	212.057	50.43	62.51	312
350.000	.59454	1.682	.054176	24.826	31553.6	34244.8	213.880	51.60	63.31	318
360.000	.57363	1.743	.051966	25.950	32093.(	34882.2	215.675	52.80	64.19	323
370.000	.55440	1.804	.049964	27.048	32642.8	35528.8	217.447	54.02	65.13	329
380.000	.53662	1.864	.048138	28.124	33203.4	36185.0	219.197	55.26	66.13	334
390.000	.52012	1.923	.046464	29.181	33775.2	36851.4	220.928	56.50	67.16	339
400.000	.50473	1.981	.044921	30.221	34358.3	37528.3	222.642	57.74	68.23	344
410.000	.49035	2.039	.043494	31.246	34953.(	38216.0	224.340	58.99	69.32	349
420.000	.47686	2.097	.042167	32.257	35559.4	38914.7	226.023	60.24	70.42	354
430.000	.46418	2.154	.040930	33.256	36177.5	39624.4	227.693	61.49	71.54	358
440.000	.45222	2.211	.039773	34.245	36807.3	40345.4	229.351	62.72	72.66	363
450.000	.44093	2.268	.038687	35.223	37449.0	41077.7	230.996	63.96	73.79	367
460.000	.43024	2.324	.037666	36.193	38102.4	41821.2	232.630	65.18	74.92	371
470.000	.42010	2.380	.036704	37.155	38767.5	42576.1	234.254	66.40	76.05	376
480.000	.41047	2.436	.035795	38.109	39444.2	43342.2	235.867	67.60	77.18	380
490.000	.40130	2.492	.034934	39.056	40132.6	44119.6	237.469	68.79	78.30	384
500.000	.39257	2.547	.034118	39.998	40832.4	44908.2	239.063	69.98	79.42	388
520.000	.37627	2.658	.032605	41.863	42266.3	46518.6	242.221	72.30	81.63	396
540.000	.36135	2.767	.031230	43.709	43745.1	48173.0	245.342	74.57	83.80	404
560.000	.34763	2.877	.029976	45.538	45267.9	49870.4	248.428	76.80	85.94	411
580.000	.33497	2.985	.028825	47.352	46833.7	51610.2	251.481	78.97	88.04	418
600.000	.32325	3.094	.027764	49.153	48441.7	53391.6	254.500	81.09	90.09	426
620.000	.31235	3.202	.026783	50.943	50091.1	55213.6	257.487	83.16	92.11	433
640.000	.30219	3.309	.025873	52.723	51780.8	57075.6	260.443	85.19	94.08	440
660.000	.29269	3.417	.025025	54.493	53510.1	58976.6	263.368	87.17	96.02	446
680.000	.28380	3.524	.024234	56.256	55278.2	60916.0	266.262	89.10	97.91	453
700.000	.27544	3.630	.023494	58.012	57084.1	62892.8	269.128	90.99	99.77	459

Table 24. Continued.

ETHANE ISOBAR AT P = 17 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.623	21.690	.04613	30.9824	855.931	5324.4	5402.8	77.061	46.33	67.93	2042
100.000	21.359	.04684	28.4227	783.069	5962.3	6041.9	83.771	45.73	68.34	1973
110.000	20.987	.04765	25.8693	710.336	6645.6	6726.6	90.298	45.08	68.01	1896
120.000	20.622	.04849	23.5286	641.974	7331.4	7413.9	96.278	44.51	68.84	1817
130.000	20.254	.04937	21.4001	578.782	8019.8	8103.7	101.799	44.05	69.13	1737
140.000	19.882	.05030	19.4696	520.541	8711.4	8796.9	106.935	43.72	69.51	1659
150.000	19.505	.05127	17.7179	466.857	9407.2	9494.3	111.747	43.50	70.01	1580
160.000	19.122	.05230	16.1249	417.292	10108.5	10197.4	116.285	43.38	70.65	1503
170.000	18.732	.05339	14.6712	371.411	10817.0	10907.7	120.591	43.37	71.44	1426
180.000	18.332	.05455	13.3336	328.816	11534.1	11626.9	124.701	43.43	72.42	1350
190.000	17.926	.05581	12.1115	289.153	12261.9	12356.8	128.647	43.58	73.60	1274
200.000	17.493	.05717	10.9744	252.117	13002.5	13099.7	132.457	43.79	75.01	1198
210.000	17.048	.05866	9.9140	217.452	13758.4	13858.1	136.157	44.07	76.73	1122
220.000	16.579	.06032	8.9177	184.933	14532.8	14635.4	139.773	44.40	78.82	1044
230.000	16.080	.06219	7.9735	154.377	15330.3	15436.0	143.332	44.79	81.42	966
240.000	15.542	.06434	7.0688	125.615	16156.9	16266.3	146.865	45.25	84.78	884
250.000	14.949	.06690	6.1897	98.480	17021.9	17135.6	150.413	45.80	89.32	799
259.732	14.293	.06997	5.3409	73.443	17917.2	18036.2	153.946	47.07	96.46	707
259.732	1.04371	.958	.112363	11.206	26863.9	28492.7	194.190	44.80	71.66	244
260.000	1.04103	.961	.111901	11.268	26881.3	28514.3	194.478	44.77	71.43	244
270.000	.95587	1.046	.098385	13.343	27418.4	29196.9	197.054	44.45	65.89	256
280.000	.89011	1.123	.089046	15.121	27931.7	29841.6	199.399	44.81	63.35	266
290.000	.83647	1.196	.081929	16.721	28435.7	30468.1	201.597	45.48	62.11	275
300.000	.79120	1.264	.076219	18.198	28937.6	31086.2	203.693	46.31	61.61	283
310.000	.75213	1.330	.071481	19.585	29441.4	31701.7	205.711	47.26	61.55	291
320.000	.71782	1.393	.067456	20.901	29949.9	32318.2	207.668	48.28	61.80	298
330.000	.68731	1.455	.063974	22.162	30465.0	32938.4	209.576	49.37	62.27	304
340.000	.65989	1.515	.060919	23.377	30987.9	33564.1	211.444	50.50	62.90	311
350.000	.63504	1.575	.058207	24.553	31519.7	34196.7	213.278	51.67	63.65	317
360.000	.61236	1.633	.055777	25.698	32061.2	34837.3	215.082	52.86	64.49	322
370.000	.59154	1.691	.053582	26.814	32612.8	35486.6	216.861	54.08	65.40	328
380.000	.57232	1.747	.051586	27.907	33175.0	36145.4	218.618	55.30	66.37	333
390.000	.55450	1.803	.049759	28.979	33748.3	36814.1	220.355	56.54	67.38	338
400.000	.53793	1.859	.048079	30.033	34332.7	37493.0	222.073	57.78	68.42	343
410.000	.52244	1.914	.046527	31.071	34928.6	38182.5	223.776	59.03	69.49	348
420.000	.50794	1.969	.045087	32.094	35536.1	38882.9	225.464	60.27	70.58	353
430.000	.49432	2.023	.043746	33.104	36155.1	39594.2	227.137	61.51	71.69	358
440.000	.48149	2.077	.042493	34.102	36785.9	40316.6	228.798	62.75	72.80	362
450.000	.46937	2.131	.041320	35.090	37428.4	41050.2	230.447	63.98	73.92	367
460.000	.45791	2.184	.040217	36.069	38082.5	41795.0	232.084	65.21	75.04	371
470.000	.44706	2.237	.039178	37.039	38748.4	42551.0	233.709	66.42	76.16	375
480.000	.43674	2.290	.038198	38.001	39425.8	43318.2	235.325	67.62	77.28	380
490.000	.42694	2.342	.037271	38.956	40114.8	44096.6	236.930	68.81	78.40	384
500.000	.41760	2.395	.036392	39.904	40815.3	44886.2	238.525	69.99	79.51	388
520.000	.40018	2.499	.034764	41.782	42250.2	46498.4	241.686	72.32	81.71	396
540.000	.38424	2.603	.033288	43.639	43730.0	48154.2	244.810	74.59	83.88	403
560.000	.36961	2.706	.031941	45.478	45253.6	49853.1	247.899	76.81	86.01	411
580.000	.35616	2.808	.030707	47.302	46820.2	51594.1	250.954	78.98	88.10	418
600.000	.34360	2.910	.029571	49.111	48428.9	53376.6	253.975	81.10	90.15	426
620.000	.33198	3.012	.028520	50.909	50078.9	55199.7	256.964	83.17	92.16	433
640.000	.32116	3.114	.027546	52.696	51769.2	57062.6	259.921	85.19	94.13	440
660.000	.31105	3.215	.026640	54.473	53499.1	58964.5	262.847	87.17	96.06	446
680.000	.30158	3.316	.025794	56.242	55267.6	60904.6	265.743	89.11	97.95	453
700.000	.29268	3.417	.025003	58.003	57073.9	62882.3	268.609	91.00	99.81	459

Table 24. Continued.

ETHANE ISOBAR AT P = 18 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.639	21.691	.04610	30.9830	856.198	5324.8	5407.8	77.055	46.33	67.93	2043
100.000	21.352	.04684	28.4284	784.090	5961.5	6045.8	83.763	45.73	68.34	1974
110.000	20.988	.04765	25.8755	710.778	6644.7	6730.5	90.290	45.08	68.60	1896
120.000	20.623	.04849	23.5351	642.429	7330.4	7417.7	96.269	44.51	68.84	1817
130.000	20.255	.04937	21.4068	579.247	8018.6	8107.5	101.790	44.06	69.12	1738
140.000	19.864	.05029	19.4765	521.015	8710.1	8800.6	106.926	43.72	69.50	1659
150.000	19.507	.05126	17.7250	467.338	9405.7	9498.0	111.737	43.50	70.00	1581
160.000	19.125	.05229	16.1323	417.780	10106.9	10201.0	116.275	43.39	70.64	1503
170.000	18.734	.05338	14.6788	371.907	10815.1	10911.2	120.580	43.37	71.43	1427
180.000	18.335	.05454	13.3468	329.320	11532.0	11630.2	124.689	43.44	72.40	1351
190.000	17.923	.05579	12.1198	289.666	12259.5	12359.9	128.634	43.58	73.58	1275
200.000	17.497	.05715	10.9831	252.643	12999.7	13102.5	132.443	43.79	74.99	1199
210.000	17.052	.05864	9.9232	217.991	13755.1	13860.7	136.142	44.07	76.69	1123
220.000	16.584	.06030	8.9276	185.490	14529.0	14637.6	139.756	44.40	78.77	1046
230.000	16.087	.06216	7.9841	154.956	15325.8	15437.7	143.312	44.80	81.36	967
240.000	15.550	.06431	7.0806	126.220	16151.4	16267.2	146.842	45.26	84.68	886
250.000	14.959	.06685	6.2032	99.121	17015.0	17135.3	150.385	45.80	89.18	801
260.000	14.287	.06999	5.3335	73.462	17933.8	18059.8	154.010	47.09	96.42	707
261.906	14.146	.07069	5.1663	68.710	18117.9	18245.1	154.720	47.22	98.06	688
261.906	1.11130	.900	.120982	10.883	26886.6	28506.4	193.886	45.30	73.82	242
270.000	1.03277	.968	.108112	12.667	27337.8	29080.7	196.251	44.86	68.21	253
280.000	.95752	1.044	.097072	14.552	27864.2	29744.1	198.664	45.08	64.86	263
290.000	.89717	1.115	.088860	16.226	28377.1	30383.4	200.907	45.67	63.21	273
300.000	.84682	1.181	.082368	17.760	28885.5	31011.1	203.035	46.46	62.45	281
310.000	.80370	1.244	.077038	19.192	29394.4	31634.0	205.077	47.38	62.22	289
320.000	.76608	1.305	.072545	20.546	29907.0	32256.7	207.054	48.39	62.36	296
330.000	.73276	1.365	.068682	21.838	30425.5	32881.9	208.978	49.46	62.74	303
340.000	.70294	1.423	.065309	23.079	30951.3	33511.9	210.859	50.58	63.30	309
350.000	.67600	1.479	.062327	24.280	31485.5	34148.3	212.703	51.74	63.99	316
360.000	.65147	1.535	.059665	25.445	32029.1	34792.1	214.517	52.92	64.79	321
370.000	.62899	1.590	.057267	26.581	32582.5	35444.3	216.304	54.13	65.67	327
380.000	.60829	1.644	.055091	27.690	33146.5	36105.6	218.067	55.35	66.61	332
390.000	.58913	1.697	.053105	28.778	33721.2	36776.5	219.810	56.58	67.59	338
400.000	.57133	1.750	.051282	29.846	34307.0	37457.5	221.534	57.82	68.62	343
410.000	.55472	1.803	.049600	30.896	34904.1	38149.0	223.241	59.06	69.67	348
420.000	.53918	1.855	.048043	31.931	35512.6	38851.0	224.933	60.31	70.75	352
430.000	.52459	1.906	.046594	32.952	36132.7	39563.9	226.610	61.54	71.84	357
440.000	.51087	1.957	.045243	33.961	36764.4	40287.8	228.274	62.78	72.94	362
450.000	.49792	2.008	.043978	34.958	37407.7	41022.7	229.926	64.01	74.05	366
460.000	.48569	2.059	.042791	35.945	38062.7	41768.8	231.566	65.23	75.16	371
470.000	.47410	2.109	.041675	36.924	38729.3	42526.0	233.194	66.44	76.28	375
480.000	.46310	2.159	.040621	37.893	39407.4	43294.3	234.812	67.64	77.39	379
490.000	.45264	2.209	.039626	38.855	40097.0	44073.7	236.419	68.83	78.50	383
500.000	.44269	2.259	.038683	39.810	40798.1	44864.1	238.016	70.01	79.60	387
520.000	.42413	2.358	.036939	41.701	42234.1	46478.1	241.180	72.33	81.79	395
540.000	.40718	2.456	.035358	43.570	43714.8	48135.5	244.308	74.60	83.95	403
560.000	.39161	2.554	.033918	45.419	45239.3	49835.7	247.399	76.82	86.07	411
580.000	.37725	2.651	.032599	47.251	46806.7	51578.0	250.456	78.99	88.16	418
600.000	.36397	2.747	.031386	49.070	48416.1	53361.6	253.479	81.11	90.20	426
620.000	.35163	2.844	.030265	50.875	50066.8	55185.7	256.470	83.18	92.21	433
640.000	.34014	2.940	.029226	52.669	51757.7	57049.6	259.428	85.20	94.17	439
660.000	.32941	3.036	.028260	54.453	53488.0	58952.4	262.356	87.18	96.10	446
680.000	.31936	3.131	.027359	56.228	55257.0	60893.3	265.253	89.12	97.99	453
700.000	.30993	3.227	.026517	57.995	57063.9	62871.7	268.120	91.01	99.84	459

Table 24. Continued.

ETHANE ISOBAR AT P = 20 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.671	21.692	.04610	30.9841	856.731	5325.6	5417.8	77.074	46.34	67.93	2043
100.000	21.354	.04683	28.4397	784.933	5959.9	6053.6	83.748	45.73	68.33	1974
110.000	20.991	.04764	25.8877	711.662	6642.9	6738.2	90.273	45.09	68.60	1897
120.000	20.626	.04845	23.5460	643.340	7328.4	7425.3	96.252	44.52	68.83	1818
130.000	20.259	.04936	21.4203	580.178	8016.3	8115.0	101.772	44.06	69.11	1739
140.000	19.888	.05028	19.4905	521.961	8707.4	8808.0	106.907	43.73	69.49	1660
150.000	19.512	.05125	17.7394	468.298	9402.7	9505.2	111.717	43.51	69.98	1582
160.000	19.129	.05228	16.1471	418.755	10103.5	10208.1	116.253	43.39	70.62	1505
170.000	18.740	.05336	14.6942	372.897	10811.3	10918.0	120.557	43.38	71.41	1428
180.000	18.341	.05452	13.3627	330.327	11527.7	11636.7	124.665	43.44	72.37	1352
190.000	17.930	.05577	12.1363	290.693	12254.6	12366.1	128.608	43.59	73.53	1277
200.000	17.505	.05713	11.0004	253.693	12994.0	13108.3	132.415	43.80	74.94	1201
210.000	17.061	.05861	9.9415	219.070	13748.6	13865.8	136.110	44.08	76.62	1125
220.000	16.595	.06025	8.9472	186.602	14521.4	14641.9	139.721	44.41	78.68	1048
230.000	16.100	.06211	8.0054	156.109	15316.7	15441.0	143.272	44.81	81.23	970
240.000	15.566	.06424	7.1042	127.427	16140.4	16268.9	146.796	45.27	84.50	889
250.000	14.979	.06675	6.2301	100.398	17001.2	17134.8	150.329	45.81	88.89	804
260.000	14.314	.06986	5.3654	74.838	17915.7	18055.5	153.940	47.10	95.91	711
266.005	13.858	.07216	4.8395	60.081	18502.9	18647.2	156.190	47.53	101.52	653
266.005	1.250	.79976	.1391	10.229	26921.6	28521.1	193.300	46.29	78.50	240
270.000	1.200	.83318	.1304	11.226	27161.6	28828.0	194.649	45.85	74.24	245
280.000	1.101	.90842	.1148	13.368	27720.7	29537.5	197.230	45.69	68.45	258
290.000	1.024	.97612	.1038	15.210	28254.4	30206.7	199.578	46.10	65.69	268
300.000	.962	1.03912	.0955	16.867	28777.5	30855.8	201.779	46.79	64.30	277
310.000	.910	1.09874	.0888	18.395	29297.7	31495.1	203.875	47.65	63.68	285
320.000	.865	1.15586	.0832	19.827	29819.1	32130.9	205.894	48.61	63.54	293
330.000	.826	1.21103	.0785	21.184	30344.8	32766.9	207.851	49.64	63.72	300
340.000	.791	1.26464	.0744	22.482	30876.7	33406.0	209.758	50.74	64.13	307
350.000	.759	1.31695	.0708	23.731	31416.1	34050.1	211.625	51.88	64.71	313
360.000	.731	1.36825	.0677	24.939	31964.1	34700.6	213.458	53.04	65.42	319
370.000	.705	1.41863	.0648	26.113	32521.5	35358.7	215.261	54.24	66.22	325
380.000	.681	1.46824	.0623	27.257	33088.8	36025.3	217.038	55.45	67.10	331
390.000	.659	1.51717	.0600	28.376	33666.6	36701.0	218.793	56.67	68.04	336
400.000	.639	1.56553	.0578	29.471	34255.2	37386.2	220.528	57.90	69.02	341
410.000	.620	1.61337	.0559	30.548	34854.8	38081.5	222.245	59.14	70.04	346
420.000	.602	1.66076	.0541	31.606	35465.5	38787.1	223.945	60.37	71.08	351
430.000	.586	1.70774	.0524	32.649	36087.7	39503.2	225.630	61.60	72.15	356
440.000	.570	1.75436	.0508	33.678	36721.3	40230.0	227.301	62.84	73.22	361
450.000	.555	1.80066	.0494	34.695	37366.3	40967.7	228.959	64.06	74.31	365
460.000	.542	1.84666	.0480	35.700	38022.9	41716.2	230.604	65.28	75.41	370
470.000	.528	1.89239	.0467	36.694	38691.0	42475.7	232.237	66.49	76.50	374
480.000	.516	1.93789	.0455	37.679	39370.5	43246.2	233.860	67.68	77.60	379
490.000	.504	1.98316	.0444	38.656	40061.4	44027.7	235.471	68.87	78.70	383
500.000	.493	2.02822	.0433	39.625	40763.7	44820.1	237.072	70.05	79.79	387
520.000	.472	2.11781	.0413	41.541	42201.9	46437.5	240.243	72.37	81.96	395
540.000	.453	2.20675	.0395	43.432	43684.5	48098.1	243.376	74.63	84.10	403
560.000	.436	2.29515	.0379	45.301	45210.8	49801.1	246.473	76.85	86.20	411
580.000	.420	2.38306	.0364	47.152	46779.7	51545.9	249.534	79.01	88.28	418
600.000	.405	2.47053	.0350	48.987	48390.6	53331.8	252.561	81.13	90.31	425
620.000	.391	2.55774	.0338	50.808	50042.5	55158.0	255.555	83.20	92.31	432
640.000	.378	2.64457	.0326	52.616	51734.6	57023.7	258.517	85.22	94.27	439
660.000	.366	2.73111	.0315	54.413	53466.6	58928.2	261.447	87.20	96.19	446
680.000	.355	2.81748	.0305	56.200	55236.0	60870.8	264.346	89.13	98.07	453
700.000	.344	2.90346	.0296	57.978	57043.7	62850.7	267.216	91.02	99.91	460

Table 24. Continued.

Table 24. Continued.

ETHANE ISOBAR AT P = 22 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.704	21.693	.04610	30.9853	857.264	5326.4	5427.8	77.083	46.34	67.93	2044
100.000	21.357	.04682	28.4510	785.776	5958.4	6061.4	83.732	45.74	68.33	1975
110.000	20.994	.04763	25.8999	712.545	6641.1	6745.9	90.257	45.09	68.59	1898
120.000	20.629	.04847	23.5609	644.250	7326.3	7433.0	96.235	44.53	68.82	1819
130.000	20.262	.04935	21.4337	581.108	8014.(	8122.6	101.754	44.07	69.10	1740
140.000	19.891	.05027	19.5044	522.907	8704.8	8815.4	106.888	43.73	69.48	1662
150.000	19.516	.05124	17.7538	469.258	9399.8	9512.5	111.698	43.51	69.97	1584
160.000	19.134	.05226	16.1619	419.729	10100.2	10215.2	116.232	43.40	70.60	1506
170.000	18.745	.05333	14.7095	373.886	10807.5	10924.9	120.535	43.38	71.38	1430
180.000	18.347	.05451	13.3785	331.333	11523.4	11643.3	124.641	43.45	72.34	1354
190.000	17.937	.05575	12.1528	291.719	12249.7	12372.3	128.582	43.60	73.50	1278
200.000	17.512	.05710	11.0177	254.742	12988.4	13114.1	132.386	43.81	74.88	1203
210.000	17.070	.05858	9.9598	220.146	13742.1	13871.0	136.079	44.08	76.56	1127
220.000	16.606	.06022	8.9667	187.712	14513.9	14646.3	139.686	44.42	78.59	1050
230.000	16.113	.06206	8.0266	157.260	15307.8	15444.3	143.233	44.81	81.11	972
240.000	15.581	.06418	7.1276	128.629	16129.6	16270.8	146.750	45.27	84.32	892
250.000	14.999	.06667	6.2566	101.668	16987.7	17134.4	150.274	45.82	88.61	808
260.000	14.340	.06973	5.3969	76.203	17898.(	18051.4	153.870	47.11	95.43	716
269.815	13.576	.07366	4.5376	52.405	18869.9	19032.0	157.571	47.85	105.36	619
269.815	1.395	.71672	.1587	9.564	26943.6	28520.4	192.732	47.28	83.76	237
270.000	1.392	.71829	.1581	9.618	26958.(	28538.2	193.003	47.24	83.44	237
280.000	1.258	.79500	.1352	12.109	27563.4	29312.4	195.819	46.41	73.11	251
290.000	1.161	.86156	.1205	14.152	28123.3	30018.7	198.298	46.59	68.67	263
300.000	1.084	.92228	.1098	15.948	28664.0	30693.0	200.584	47.15	66.43	273
310.000	1.021	.97912	.1014	17.582	29196.9	31351.0	202.741	47.93	65.31	282
320.000	.968	1.03313	.0946	19.098	29728.3	32001.2	204.806	48.84	64.83	290
330.000	.922	1.08501	.0889	20.524	30262.0	32649.0	206.799	49.84	64.78	297
340.000	.881	1.13519	.0840	21.881	30800.4	33297.8	208.736	50.90	65.03	304
350.000	.845	1.18402	.0797	23.181	31345.3	33950.2	210.627	52.02	65.48	311
360.000	.812	1.23171	.0760	24.433	31898.0	34607.8	212.479	53.17	66.08	317
370.000	.782	1.27846	.0727	25.646	32459.5	35272.2	214.299	54.35	66.81	323
380.000	.755	1.32441	.0697	26.825	33030.5	35944.2	216.091	55.55	67.62	329
390.000	.730	1.36966	.0670	27.974	33611.5	36624.7	217.859	56.76	68.50	335
400.000	.707	1.41431	.0646	29.099	34202.9	37314.4	219.605	57.98	69.44	340
410.000	.686	1.45843	.0623	30.201	34805.0	38013.6	221.331	59.21	70.42	345
420.000	.666	1.50209	.0602	31.284	35418.1	38722.7	223.040	60.44	71.43	350
430.000	.647	1.54533	.0583	32.349	36042.4	39442.1	224.733	61.67	72.46	355
440.000	.630	1.58826	.0565	33.398	36677.9	40172.0	226.411	62.89	73.51	360
450.000	.613	1.63087	.0549	34.433	37324.8	40912.4	228.075	64.11	74.58	364
460.000	.598	1.67299	.0533	35.456	37983.0	41663.5	229.726	65.32	75.65	369
470.000	.583	1.71496	.0519	36.467	38652.5	42425.4	231.364	66.53	76.73	373
480.000	.569	1.75668	.0505	37.468	39333.5	43198.2	232.991	67.73	77.81	378
490.000	.556	1.79818	.0492	38.459	40025.7	43981.7	234.606	68.91	78.90	382
500.000	.544	1.83947	.0480	39.441	40729.2	44776.0	236.211	70.08	79.98	386
520.000	.520	1.92151	.0458	41.382	42169.7	46397.0	239.390	72.40	82.12	395
540.000	.499	2.00236	.0438	43.296	43654.3	48060.7	242.529	74.66	84.24	403
560.000	.480	2.08374	.0419	45.186	45182.3	49766.5	245.631	76.87	86.34	410
580.000	.462	2.16410	.0403	47.055	46752.8	51513.8	248.696	79.04	88.40	418
600.000	.446	2.24405	.0387	48.907	48365.1	53302.0	251.727	81.15	90.42	425
620.000	.430	2.32364	.0373	50.743	50018.3	55130.3	254.724	83.22	92.41	432
640.000	.416	2.40296	.0360	52.565	51711.5	56997.9	257.689	85.24	94.36	439
660.000	.403	2.48188	.0348	54.375	53444.0	58904.2	260.622	87.21	96.27	446
680.000	.391	2.56060	.0337	56.174	55215.0	60848.4	263.524	89.15	98.15	453
700.000	.379	2.63910	.0326	57.963	57023.7	62829.7	266.395	91.03	99.98	460

Table 24. Continued.

ETHANE ISOBAR AT P = 24 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.736	21.694	.04610	30.9865	857.796	5327.2	5437.8	77.092	46.34	67.92	2044
100.000	21.359	.04682	28.4623	786.618	5956.8	6069.2	83.716	45.75	68.32	1976
110.000	20.997	.04763	25.9121	713.427	6639.3	6753.6	90.240	45.10	68.58	1899
120.000	20.632	.04847	23.5737	645.159	7324.3	7440.6	96.218	44.53	68.81	1820
130.000	20.266	.04934	21.4471	582.037	8011.7	8130.1	101.736	44.08	69.09	1741
140.000	19.895	.05026	19.5183	523.852	8702.2	8822.8	106.869	43.74	69.46	1663
150.000	19.520	.05123	17.7681	470.218	9396.8	9519.8	111.678	43.52	69.95	1585
160.000	19.139	.05225	16.1767	420.702	10096.8	10222.2	116.211	43.41	70.58	1508
170.000	18.750	.05333	14.7247	374.874	10803.7	10931.7	120.513	43.39	71.36	1431
180.000	18.353	.05449	13.3943	332.338	11519.1	11649.9	124.617	43.46	72.31	1356
190.000	17.944	.05573	12.1693	292.743	12244.8	12378.6	128.557	43.60	73.46	1280
200.000	17.520	.05708	11.0350	255.789	12982.9	13119.9	132.358	43.82	74.83	1205
210.000	17.079	.05855	9.9780	221.220	13735.7	13876.2	136.048	44.09	76.49	1129
220.000	16.616	.06018	8.9861	188.819	14506.3	14650.8	139.651	44.43	78.50	1053
230.000	16.125	.06201	8.0476	158.407	15298.9	15447.7	143.194	44.82	80.99	975
240.000	15.597	.06412	7.1508	129.827	16118.8	16272.7	146.704	45.28	84.14	895
250.000	15.018	.06659	6.2830	102.931	16974.3	17134.1	150.220	45.83	88.34	812
260.000	14.366	.06961	5.4280	77.559	17880.5	18047.5	153.802	47.11	94.97	721
270.000	13.598	.07354	4.5603	53.465	18864.5	19041.0	157.550	47.86	104.66	623
273.381	13.296	.07521	4.2560	45.531	19222.4	19402.9	158.882	48.18	109.70	587
273.381	1.547	.64652	.1797	8.892	26953.4	28505.1	192.174	48.27	89.76	234
280.000	1.433	.69789	.1592	10.753	27388.1	29063.0	194.396	47.30	79.45	245
290.000	1.308	.76465	.1393	13.045	27982.1	29817.2	197.043	47.13	72.35	258
300.000	1.214	.82404	.1255	15.001	28544.0	30521.7	199.432	47.54	68.92	268
310.000	1.138	.87865	.1150	16.751	29091.8	31201.0	201.659	48.23	67.14	278
320.000	1.075	.93046	.1067	18.358	29634.3	31867.4	203.775	49.08	66.26	287
330.000	1.021	.97971	.0998	19.858	30176.7	32528.0	205.808	50.04	65.94	294
340.000	.974	1.02712	.0940	21.276	30722.3	33187.3	207.776	51.07	65.98	302
350.000	.932	1.07307	.0890	22.628	31273.1	33848.5	209.692	52.16	66.29	309
360.000	.895	1.11762	.0847	23.926	31830.9	34513.6	211.566	53.30	66.78	315
370.000	.861	1.16158	.0808	25.178	32396.7	35184.5	213.404	54.46	67.41	321
380.000	.830	1.20482	.0774	26.393	32971.4	35862.2	215.211	55.64	68.15	327
390.000	.802	1.24670	.0743	27.575	33555.7	36547.8	216.992	56.85	68.98	333
400.000	.776	1.28823	.0715	28.728	34150.1	37242.0	218.749	58.06	69.87	339
410.000	.752	1.32931	.0689	29.857	34754.9	37945.2	220.486	59.28	70.80	344
420.000	.730	1.36986	.0666	30.963	35370.4	38658.1	222.203	60.50	71.78	349
430.000	.709	1.40993	.0644	32.050	35998.9	39380.8	223.904	61.73	72.78	354
440.000	.690	1.44974	.0624	33.120	36634.4	40113.7	225.589	62.95	73.81	359
450.000	.672	1.48916	.0605	34.175	37283.0	40857.0	227.259	64.16	74.85	364
460.000	.654	1.52827	.0588	35.215	37942.9	41610.7	228.916	65.37	75.90	368
470.000	.638	1.56711	.0571	36.242	38614.0	42375.1	230.560	66.57	76.97	373
480.000	.623	1.60569	.0556	37.258	39296.4	43150.0	232.191	67.77	78.03	377
490.000	.608	1.64405	.0542	38.264	39989.9	43935.7	233.811	68.95	79.10	382
500.000	.594	1.68225	.0528	39.260	40694.7	44732.0	235.420	70.12	80.17	386
520.000	.569	1.75794	.0503	41.226	42137.4	46356.5	238.605	72.43	82.29	394
540.000	.546	1.83304	.0480	43.162	43624.0	48023.3	241.750	74.69	84.39	402
560.000	.524	1.90758	.0460	45.072	45153.8	49731.9	244.857	76.90	86.47	410
580.000	.505	1.98164	.0442	46.959	46725.9	51481.8	247.927	79.06	88.52	418
600.000	.487	2.05529	.0425	48.828	48339.6	53272.3	250.962	81.17	90.53	425
620.000	.470	2.12857	.0409	50.679	49994.1	55102.6	253.963	83.24	92.51	432
640.000	.454	2.20153	.0394	52.515	51688.5	56972.2	256.930	85.26	94.45	439
660.000	.440	2.27420	.0381	54.338	53422.1	58880.2	259.866	87.23	96.35	446
680.000	.426	2.34662	.0369	56.149	55194.1	60826.0	262.770	89.16	98.22	453
700.000	.413	2.41881	.0357	57.949	57003.6	62808.8	265.644	91.05	100.06	460

Table 24. Continued.

Table 24. Continued.

ETHANE ISOBAR AT P = 26 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.768	21.695	.04609	30.9877	858.329	5328.0	5447.8	77.100	46.35	67.92	2045
100.000	21.362	.04681	28.4736	787.460	5955.2	6076.9	83.700	45.75	68.31	1977
110.000	20.999	.04762	25.9242	714.309	6637.5	6761.3	90.224	45.11	68.57	1900
120.000	20.636	.04846	23.5866	646.068	7322.2	7448.2	96.200	44.54	68.80	1821
130.000	20.269	.04934	21.4605	582.966	8009.4	8137.6	101.718	44.08	69.08	1743
140.000	19.899	.05025	19.5321	524.796	8699.6	8830.2	106.850	43.75	69.45	1664
150.000	19.524	.05122	17.7824	471.176	9393.9	9527.0	111.658	43.53	69.94	1586
160.000	19.144	.05224	16.1915	421.675	10093.5	10229.3	116.190	43.41	70.56	1509
170.000	18.756	.05332	14.7400	375.861	10800.0	10938.6	120.490	43.40	71.33	1433
180.000	18.359	.05447	13.4101	333.342	11514.9	11656.5	124.593	43.47	72.28	1357
190.000	17.950	.05571	12.1857	293.766	12240.0	12384.8	128.531	43.61	73.42	1282
200.000	17.528	.05705	11.0522	256.835	12977.3	13125.7	132.330	43.82	74.78	1207
210.000	17.088	.05852	9.9962	222.293	13729.3	13881.4	136.017	44.10	76.43	1131
220.000	16.627	.06014	9.0055	189.924	14498.9	14655.3	139.617	44.43	78.41	1055
230.000	16.138	.06197	8.0686	159.552	15290.0	15451.1	143.155	44.83	80.86	978
240.000	15.612	.06405	7.1739	131.020	16108.1	16274.7	146.659	45.29	83.97	898
250.000	15.037	.06650	6.3091	104.189	16961.0	17133.9	150.166	45.83	88.07	815
260.000	14.392	.06948	5.4586	78.904	17863.3	18043.9	153.735	47.12	94.52	725
270.000	13.635	.07334	4.5989	54.948	18840.4	19031.1	157.459	47.86	103.76	629
276.735	13.017	.07682	3.9913	39.344	19563.4	19763.2	160.136	48.53	114.65	555
276.735	1.706	.58623	.2024	8.211	26951.4	28475.6	191.620	49.26	96.71	231
280.000	1.633	.61242	.1885	9.261	27187.5	28779.8	192.917	48.48	88.78	237
290.000	1.468	.68104	.1607	11.878	27828.5	29599.2	195.794	47.77	77.00	252
300.000	1.351	.73993	.1428	14.022	28416.6	30340.5	198.307	47.97	71.87	264
310.000	1.260	.79342	.1298	15.902	28981.7	31044.6	200.616	48.55	69.23	274
320.000	1.185	.84320	.1197	17.607	29536.9	31729.2	202.789	49.33	67.84	283
330.000	1.123	.89034	.1115	19.185	30088.9	32403.8	204.865	50.25	67.19	292
340.000	1.069	.93546	.1046	20.667	30642.2	33074.5	206.867	51.25	67.01	299
350.000	1.021	.97906	.0988	22.073	31199.4	33745.0	208.811	52.31	67.14	306
360.000	.979	1.02136	.0937	23.418	31762.5	34418.0	210.707	53.43	67.51	313
370.000	.941	1.06262	.0893	24.712	32332.9	35095.7	212.563	54.57	68.05	320
380.000	.907	1.10300	.0853	25.962	32911.6	35779.4	214.387	55.75	68.71	326
390.000	.875	1.14263	.0818	27.177	33499.4	36470.2	216.181	56.94	69.47	332
400.000	.846	1.18161	.0786	28.359	34096.8	37169.0	217.950	58.14	70.31	337
410.000	.820	1.22004	.0757	29.514	34704.4	37876.5	219.697	59.35	71.20	343
420.000	.795	1.25797	.0730	30.645	35322.3	38593.1	221.424	60.57	72.14	348
430.000	.772	1.29546	.0706	31.754	35951.0	39319.3	223.132	61.79	73.11	353
440.000	.750	1.33259	.0683	32.845	36590.6	40055.3	224.824	63.00	74.11	358
450.000	.730	1.36937	.0662	33.918	37241.1	40801.4	226.501	64.21	75.13	363
460.000	.711	1.40583	.0643	34.976	37902.7	41557.8	228.164	65.42	76.16	367
470.000	.693	1.44202	.0625	36.020	38575.4	42324.6	229.813	66.62	77.20	372
480.000	.677	1.47795	.0607	37.052	39259.2	43101.8	231.449	67.81	78.25	377
490.000	.661	1.51365	.0591	38.071	39954.1	43889.6	233.073	68.99	79.30	381
500.000	.646	1.54914	.0576	39.081	40660.1	44687.9	234.686	70.16	80.36	385
520.000	.617	1.61956	.0549	41.072	42105.1	46316.0	237.879	72.46	82.46	394
540.000	.592	1.68933	.0524	43.030	43593.7	47986.0	241.030	74.72	84.54	402
560.000	.569	1.75854	.0501	44.960	45125.3	49697.5	244.142	76.93	86.60	410
580.000	.547	1.82727	.0481	46.866	46699.0	51449.9	247.216	79.08	88.64	417
600.000	.528	1.89558	.0462	48.750	48314.1	53242.6	250.255	81.19	90.64	425
620.000	.509	1.96353	.0445	50.617	49969.9	55075.1	253.259	83.26	92.61	432
640.000	.492	2.03115	.0429	52.467	51665.5	56946.5	256.230	85.27	94.54	439
660.000	.477	2.09849	.0414	54.302	53400.2	58856.3	259.168	87.25	96.44	446
680.000	.462	2.16557	.0401	56.125	55173.2	60803.7	262.075	89.18	98.30	453
700.000	.448	2.23243	.0388	57.936	56983.7	62788.0	264.950	91.06	100.13	460

Table 24. Continued.

ETHANE ISOBAR AT P = 28 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.800	21.696	.04609	30.9889	858.862	5328.8	5457.9	77.109	46.35	67.92	2045
100.000	21.364	.04681	28.4849	788.300	5953.6	6084.7	83.684	45.76	68.31	1978
110.000	21.002	.04761	25.9364	715.190	6635.7	6769.1	90.208	45.11	68.57	1901
120.000	20.639	.04845	23.5994	646.977	7320.2	7455.9	96.183	44.54	68.80	1822
130.000	20.272	.04933	21.4739	583.834	8007.1	8145.2	101.700	44.09	69.07	1744
140.000	19.903	.05024	19.5460	525.740	8697.0	8837.7	106.832	43.75	69.44	1665
150.000	19.529	.05121	17.7968	472.134	9390.9	9534.3	111.638	43.53	69.92	1588
160.000	19.148	.05222	16.2062	422.646	10090.2	10236.4	116.169	43.42	70.54	1511
170.000	18.761	.05330	14.7552	376.848	10796.2	10945.5	120.468	43.40	71.31	1434
180.000	18.365	.05445	13.4259	334.345	11510.6	11663.1	124.570	43.47	72.25	1359
190.000	17.957	.05569	12.2021	294.788	12235.2	12391.1	128.505	43.62	73.38	1284
200.000	17.536	.05703	11.0693	257.879	12971.8	13131.5	132.302	43.83	74.73	1209
210.000	17.097	.05849	10.0143	223.363	13722.9	13886.7	135.987	44.11	76.36	1134
220.000	16.638	.06011	9.0248	191.027	14491.5	14659.7	139.583	44.44	78.33	1058
230.000	16.150	.06192	8.0894	160.693	15281.3	15454.6	143.116	44.84	80.75	981
240.000	15.627	.06399	7.1968	132.210	16097.6	16276.7	146.614	45.30	83.80	901
250.000	15.056	.06642	6.3349	105.440	16947.9	17133.9	150.113	45.84	87.81	819
260.000	14.417	.06936	5.4889	80.240	17846.4	18040.6	153.668	47.12	94.09	729
270.000	13.671	.07315	4.6366	56.412	18816.9	19021.7	157.370	47.86	102.92	635
279.904	12.736	.07852	3.7405	33.754	19895.4	20115.3	161.346	48.89	120.41	525
279.904	1.874	.53370	.2271	7.523	26937.6	28431.9	191.061	50.28	104.92	228
280.000	1.871	.53452	.2265	7.559	26947.7	28444.3	191.310	50.24	104.52	228
290.000	1.646	.60751	.1855	10.637	27659.(	29360.1	194.525	48.52	83.14	246
300.000	1.499	.66693	.1621	13.006	28280.4	30147.8	197.196	48.45	75.42	259
310.000	1.390	.71958	.1459	15.032	28866.1	30880.9	199.600	48.90	71.62	270
320.000	1.302	.76800	.1336	16.843	29435.6	31586.0	201.839	49.60	69.60	280
330.000	1.229	.81346	.1238	18.505	29998.4	32276.1	203.963	50.46	68.55	289
340.000	1.167	.85675	.1158	20.054	30560.1	32959.0	206.001	51.43	68.11	297
350.000	1.113	.89834	.1090	21.517	31124.2	33639.5	207.974	52.47	68.06	304
360.000	1.065	.93859	.1031	22.910	31692.9	34321.0	209.893	53.56	68.28	311
370.000	1.023	.97773	.0980	24.245	32268.1	35005.8	211.769	54.69	68.71	318
380.000	.984	1.01595	.0935	25.533	32851.0	35695.6	213.609	55.85	69.29	324
390.000	.949	1.05339	.0895	26.780	33442.4	36391.9	215.418	57.03	69.98	330
400.000	.917	1.09017	.0859	27.992	34043.0	37095.5	217.199	58.22	70.76	336
410.000	.888	1.12637	.0826	29.174	34653.4	37807.3	218.956	59.43	71.61	341
420.000	.861	1.16207	.0797	30.329	35273.9	38527.7	220.693	60.64	72.50	347
430.000	.835	1.19733	.0769	31.461	35904.9	39257.4	222.409	61.85	73.44	352
440.000	.812	1.23219	.0744	32.572	36546.5	39996.7	224.109	63.06	74.41	357
450.000	.789	1.26670	.0721	33.664	37198.9	40745.7	225.792	64.27	75.41	362
460.000	.769	1.30090	.0699	34.740	37862.3	41504.8	227.461	65.47	76.42	367
470.000	.749	1.33481	.0679	35.800	38536.6	42274.1	229.115	66.66	77.44	371
480.000	.731	1.36847	.0660	36.847	39221.9	43053.6	230.756	67.85	78.47	376
490.000	.713	1.40190	.0642	37.882	39918.2	43843.5	232.385	69.03	79.51	380
500.000	.697	1.43511	.0626	38.905	40625.5	44643.8	234.001	70.19	80.55	385
520.000	.666	1.50097	.0595	40.920	42072.8	46275.5	237.201	72.49	82.63	393
540.000	.639	1.56617	.0568	42.900	43563.4	47948.7	240.358	74.75	84.69	402
560.000	.613	1.63081	.0543	44.850	45096.8	49663.0	243.475	76.95	86.74	410
580.000	.590	1.69497	.0520	46.774	46672.1	51418.0	246.554	79.11	88.76	417
600.000	.569	1.75871	.0500	48.675	48288.7	53213.1	249.597	81.22	90.75	425
620.000	.549	1.82208	.0481	50.556	49945.8	55047.6	252.605	83.28	92.71	432
640.000	.530	1.88513	.0464	52.420	51642.6	56921.0	255.578	85.29	94.63	439
660.000	.513	1.94789	.0448	54.268	53378.4	58832.5	258.519	87.26	96.52	446
680.000	.497	2.01040	.0433	56.103	55152.4	60781.5	261.428	89.19	98.38	453

Table 24. Continued.

ETHANE ISOBAR AT P = 30 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.832	21.698	.04609	30.9901	859.395	5329.6	5467.9	77.118	46.35	67.92	2046
100.000	21.367	.04680	28.4961	789.141	5952.1	6092.5	83.668	45.76	68.30	1979
110.000	21.065	.04761	25.9486	716.071	6633.9	6776.8	90.191	45.12	68.56	1902
120.000	20.642	.04845	23.6123	647.885	7318.2	7463.5	96.166	44.55	68.79	1823
130.000	20.276	.04932	21.4873	584.822	8004.8	8152.7	101.682	44.10	69.06	1745
140.000	19.907	.05023	19.5599	526.684	8694.4	8845.1	106.813	43.76	69.42	1666
150.000	19.533	.05120	17.8110	473.092	9388.0	9541.6	111.618	43.54	69.90	1589
160.000	19.153	.05221	16.2210	423.618	10086.9	10243.5	116.149	43.43	70.52	1512
170.000	18.766	.05329	14.7704	377.833	10792.5	10952.4	120.446	43.41	71.28	1436
180.000	18.371	.05443	13.4416	335.347	11506.4	11669.7	124.546	43.48	72.22	1360
190.000	17.964	.05567	12.2185	295.809	12230.3	12397.3	128.479	43.62	73.34	1286
200.000	17.544	.05700	11.0864	258.922	12966.3	13137.3	132.274	43.84	74.68	1211
210.000	17.106	.05846	10.0323	224.432	13716.6	13891.9	135.956	44.11	76.30	1136
220.000	16.648	.06007	9.0440	192.127	14484.1	14664.3	139.549	44.45	78.24	1060
230.000	16.163	.06187	8.1102	161.831	15272.5	15458.1	143.078	44.84	80.63	983
240.000	15.642	.06393	7.2196	133.395	16087.1	16278.9	146.570	45.31	83.63	904
250.000	15.075	.06633	6.3606	106.685	16935.0	17134.0	150.060	45.85	87.56	823
260.000	14.442	.06924	5.5188	81.567	17829.7	18037.5	153.603	47.13	93.68	734
270.000	13.706	.07296	4.6735	57.861	18793.9	19012.8	157.283	47.86	102.12	640
280.000	12.784	.07822	3.7830	35.210	19870.2	20104.9	161.253	48.88	118.52	532
282.910	12.451	.08031	3.5012	28.691	20220.7	20461.7	162.520	49.27	127.24	496
282.910	2.052	.48733	.2539	6.827	26911.5	28373.6	190.491	51.33	114.80	225
290.000	1.847	.54147	.2149	9.298	27468.4	29092.8	193.208	49.46	91.70	239
300.000	1.666	.60025	.1838	11.947	28133.6	29941.1	196.085	48.99	79.78	254
310.000	1.527	.65495	.1635	14.139	28744.1	30709.0	198.603	49.27	74.40	266
320.000	1.424	.70242	.1486	16.067	29330.1	31437.4	200.915	49.89	71.57	276
330.000	1.339	.74658	.1369	17.817	29904.9	32144.7	203.092	50.69	70.05	286
340.000	1.268	.78833	.1275	19.437	30475.8	32840.8	205.170	51.62	69.29	294
350.000	1.207	.82827	.1196	20.959	31047.3	33532.1	207.174	52.62	69.02	302
360.000	1.154	.86677	.1129	22.401	31622.1	34222.4	209.118	53.69	69.09	309
370.000	1.106	.90410	.1071	23.780	32202.4	34914.7	211.015	54.81	69.40	316
380.000	1.063	.94047	.1020	25.105	32789.6	35611.0	212.872	55.95	69.89	322
390.000	1.025	.97604	.0975	26.385	33384.8	36312.9	214.695	57.12	70.51	329
400.000	.989	1.01091	.0934	27.627	33988.7	37021.4	216.489	58.31	71.23	335
410.000	.957	1.04520	.0898	28.836	34602.0	37737.6	218.257	59.50	72.02	340
420.000	.927	1.07896	.0864	30.016	35225.2	38462.1	220.003	60.71	72.88	346
430.000	.899	1.11227	.0834	31.170	35858.5	39195.3	221.728	61.91	73.78	351
440.000	.873	1.14518	.0806	32.302	36502.3	39937.8	223.435	63.12	74.72	356
450.000	.849	1.17774	.0780	33.413	37156.6	40689.8	225.125	64.32	75.69	361
460.000	.826	1.20997	.0756	34.506	37821.7	41451.6	226.800	65.52	76.68	366
470.000	.805	1.24192	.0734	35.583	38497.7	42223.4	228.459	66.71	77.68	371
480.000	.785	1.27361	.0713	36.646	39184.5	43005.3	230.105	67.89	78.70	375
490.000	.766	1.30506	.0694	37.694	39882.2	43797.4	231.739	69.07	79.72	380
500.000	.748	1.33630	.0675	38.731	40590.7	44599.6	233.359	70.23	80.74	384
520.000	.715	1.39821	.0642	40.771	42040.4	46235.0	236.566	72.53	82.80	393
540.000	.685	1.45945	.0612	42.773	43533.1	47911.5	239.729	74.76	84.85	401
560.000	.658	1.52013	.0585	44.743	45068.3	49628.6	242.852	76.98	86.87	409
580.000	.633	1.58032	.0561	46.684	46645.2	51386.2	245.935	79.13	88.88	417
600.000	.610	1.64010	.0538	48.602	48263.3	53183.6	248.982	81.24	90.86	425
620.000	.588	1.69955	.0518	50.498	49921.7	55020.2	251.993	83.30	92.81	432
640.000	.569	1.75869	.0499	52.375	51619.7	56895.5	254.970	85.31	94.72	439
660.000	.550	1.81758	.0482	54.236	53356.6	58808.7	257.913	87.28	96.60	446
680.000	.533	1.87593	.0466	56.082	55131.6	60759.3	260.825	89.21	98.45	453
700.000	.517	1.93424	.0451	57.914	56943.9	62746.6	263.705	91.09	100.27	460

Table 24. Continued.

ETHANE ISOBAR AT P = 32 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.865	21.699	.04609	30.9913	859.927	5330.4	5477.9	77.127	46.36	67.91	2046
100.000	21.369	.04680	28.5074	789.981	5950.5	6100.3	83.653	45.77	68.30	1979
110.000	21.008	.04760	25.9607	716.951	6632.2	6784.5	90.175	45.12	68.55	1903
120.000	20.645	.04844	23.6251	648.793	7316.1	7471.1	96.149	44.56	68.78	1824
130.000	20.279	.04931	21.5007	585.749	8002.5	8160.3	101.665	44.10	69.05	1746
140.000	19.910	.05023	19.5737	527.627	8691.8	8852.5	106.794	43.77	69.41	1668
150.000	19.537	.05119	17.8253	474.049	9385.1	9548.9	111.599	43.55	69.89	1590
160.000	19.158	.05220	16.2357	424.588	10083.6	10250.6	116.128	43.43	70.50	1513
170.000	18.772	.05327	14.7856	378.818	10788.8	10959.2	120.424	43.42	71.26	1437
180.000	18.377	.05442	13.4573	336.348	11502.2	11676.3	124.522	43.49	72.19	1362
190.000	17.971	.05565	12.2348	296.829	12225.6	12403.6	128.454	43.63	73.30	1287
200.000	17.551	.05698	11.1035	259.963	12960.8	13143.1	132.247	43.85	74.64	1213
210.000	17.115	.05843	10.0503	225.499	13710.3	13897.2	135.926	44.12	76.23	1138
220.000	16.658	.06003	9.0631	193.225	14476.7	14668.8	139.515	44.46	78.16	1062
230.000	16.175	.06182	8.1308	162.966	15263.9	15461.7	143.039	44.85	80.51	986
240.000	15.657	.06387	7.2423	134.576	16076.7	16281.1	146.526	45.31	83.47	907
250.000	15.094	.06625	6.3860	107.925	16922.2	17134.2	150.008	45.85	87.32	826
260.000	14.466	.06913	5.5483	82.885	17813.3	18034.5	153.538	47.13	93.28	738
270.000	13.740	.07278	4.7098	59.295	18771.5	19004.4	157.198	47.87	101.37	646
280.000	12.839	.07789	3.8328	36.849	19835.2	20084.4	161.124	48.87	116.58	540
285.769	12.160	.08224	3.2714	24.096	20541.6	20804.8	163.670	49.68	135.53	467
285.769	2.242	.44596	.2835	6.124	26872.4	28239.4	189.902	52.43	127.00	222
290.000	2.081	.48062	.2512	7.824	27247.2	28785.2	191.795	50.70	104.74	231
300.000	1.835	.54484	.2084	10.836	27973.9	29717.4	194.957	49.61	85.32	248
310.000	1.673	.59770	.1828	13.221	28614.9	30527.5	197.614	49.68	77.67	262
320.000	1.551	.64463	.1647	15.277	29220.0	31282.8	200.012	50.19	73.80	273
330.000	1.454	.68779	.1509	17.122	29808.3	32009.2	202.247	50.93	71.69	283
340.000	1.373	.72836	.1399	18.817	30389.3	32719.8	204.369	51.81	70.57	291
350.000	1.304	.76683	.1308	20.399	30968.6	33422.5	206.405	52.79	70.06	300
360.000	1.244	.80384	.1232	21.892	31549.9	34122.2	208.377	53.83	69.95	307
370.000	1.191	.83962	.1166	23.315	32135.6	34822.4	210.295	54.93	70.13	314
380.000	1.144	.87443	.1108	24.679	32727.4	35525.4	212.170	56.06	70.51	321
390.000	1.101	.90833	.1057	25.993	33326.5	36233.1	214.008	57.22	71.05	327
400.000	1.062	.94155	.1012	27.265	33933.9	36946.8	215.815	58.39	71.71	333
410.000	1.027	.97415	.0971	28.501	34550.2	37667.5	217.594	59.58	72.45	339
420.000	.994	1.00624	.0934	29.705	35176.1	38396.0	219.350	60.77	73.26	345
430.000	.964	1.03786	.0900	30.882	35811.8	39133.0	221.084	61.97	74.13	350
440.000	.935	1.06907	.0869	32.034	36457.7	39878.8	222.798	63.17	75.04	355
450.000	.909	1.09991	.0841	33.165	37114.1	40633.8	224.495	64.37	75.98	360
460.000	.885	1.13043	.0815	34.276	37781.0	41398.4	226.175	65.57	76.95	365
470.000	.862	1.16066	.0790	35.369	38458.6	42172.7	227.841	66.75	77.93	370
480.000	.840	1.19062	.0767	36.447	39147.0	42957.0	229.492	67.93	78.92	375
490.000	.819	1.22035	.0746	37.510	39846.1	43751.2	231.129	69.10	79.93	379
500.000	.800	1.24986	.0726	38.560	40556.0	44555.5	232.754	70.27	80.94	384
520.000	.764	1.30831	.0689	40.624	42008.0	46194.6	235.968	72.56	82.97	393
540.000	.732	1.36609	.0657	42.648	43502.8	47874.3	239.138	74.80	85.00	401
560.000	.703	1.42330	.0628	44.638	45039.8	49594.3	242.265	77.00	87.01	409
580.000	.676	1.48003	.0601	46.597	46618.3	51354.4	245.353	79.15	89.00	417
600.000	.651	1.53633	.0577	48.530	48237.9	53154.1	248.404	81.26	90.97	425
620.000	.628	1.59227	.0555	50.441	49897.6	54992.9	251.418	83.31	92.91	432
640.000	.607	1.64788	.0534	52.332	51596.8	56870.0	254.398	85.33	94.81	439
660.000	.587	1.70321	.0516	54.205	53334.8	58785.1	257.344	87.30	96.69	446
680.000	.569	1.75828	.0498	56.063	55110.8	60737.3	260.258	89.22	98.53	453
700.000	.552	1.81312	.0482	57.906	56924.0	62726.0	263.141	91.10	100.34	460

Table 24. Continued.

Table 24. Continued.

ETHANE ISOBAR AT P = 34 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.897	21.700	.04608	30.9925	860.460	5331.2	5487.9	77.135	46.36	67.91	2047
100.000	21.372	.04679	28.5187	790.820	5949.0	6108.0	83.637	45.77	68.29	1980
110.000	21.011	.04759	25.9729	717.831	6630.4	6792.2	90.158	45.13	68.55	1904
120.000	20.648	.04843	23.6379	649.700	7314.1	7478.8	96.132	44.56	68.77	1825
130.000	20.283	.04930	21.5140	586.676	8000.2	8167.8	101.647	44.11	69.04	1747
140.000	19.914	.05022	19.5875	528.569	8689.2	8859.9	106.776	43.77	69.40	1669
150.000	19.541	.05117	17.8396	475.005	9382.2	9556.2	111.579	43.55	69.87	1591
160.000	19.163	.05219	16.2504	425.558	10080.3	10257.7	116.107	43.44	70.48	1515
170.000	18.777	.05326	14.8007	379.802	10785.1	10966.1	120.402	43.42	71.23	1439
180.000	18.383	.05440	13.4730	337.348	11498.0	11682.9	124.498	43.49	72.15	1364
190.000	17.977	.05563	12.2511	297.847	12220.8	12409.9	128.428	43.64	73.26	1289
200.000	17.559	.05695	11.1205	261.003	12955.4	13149.0	132.219	43.85	74.59	1215
210.000	17.124	.05840	10.0682	226.565	13704.0	13902.5	135.895	44.13	76.17	1140
220.000	16.669	.05999	9.0822	194.320	14469.4	14673.4	139.481	44.46	78.08	1065
230.000	16.187	.06178	8.1513	164.098	15255.3	15465.3	143.001	44.86	80.40	988
240.000	15.672	.06381	7.2648	135.753	16066.4	16283.4	146.482	45.32	83.31	910
250.000	15.112	.06617	6.4112	109.158	16909.5	17134.5	149.956	45.86	87.08	830
260.000	14.490	.06901	5.5775	84.194	17797.2	18031.8	153.475	47.14	92.89	742
270.000	13.773	.07260	4.7453	60.714	18749.6	18996.5	157.115	47.87	100.66	651
280.000	12.892	.07755	3.8809	38.457	19801.6	20065.3	161.000	48.85	114.83	548
288.497	11.856	.08433	3.0492	19.925	20860.4	21147.1	164.804	50.13	145.86	439
288.497	2.448	.40855	.3161	5.414	26818.9	28208.0	189.287	53.59	142.48	218
290.000	2.368	.42236	.2992	6.137	26976.8	28412.9	190.200	52.55	128.02	222
300.000	2.031	.49245	.2369	9.661	27797.6	29471.9	193.793	50.33	92.61	243
310.000	1.838	.54445	.2042	12.274	28477.1	30335.0	196.624	50.13	81.56	257
320.000	1.686	.59320	.1821	14.472	29104.7	31121.6	199.122	50.51	76.32	269
330.000	1.573	.63564	.1658	16.419	29708.1	31869.3	201.422	51.17	73.50	280
340.000	1.481	.67515	.1530	18.192	30300.3	32595.8	203.591	52.01	71.95	289
350.000	1.403	.71251	.1426	19.837	30888.2	33310.8	205.664	52.95	71.16	297
360.000	1.336	.74825	.1338	21.384	31476.4	34020.4	207.663	53.97	70.85	305
370.000	1.278	.78268	.1264	22.851	32067.8	34728.9	209.604	55.05	70.89	312
380.000	1.225	.81606	.1199	24.254	32664.3	35438.9	211.498	56.17	71.16	319
390.000	1.178	.84857	.1142	25.602	33267.5	36152.7	213.351	57.31	71.62	326
400.000	1.136	.88034	.1091	26.905	33878.5	36871.7	215.172	58.47	72.20	332
410.000	1.097	.91149	.1046	28.168	34498.0	37597.0	216.963	59.65	72.89	338
420.000	1.061	.94208	.1005	29.398	35126.6	38329.7	218.728	60.84	73.66	344
430.000	1.029	.97221	.0968	30.597	35764.8	39070.3	220.471	62.04	74.49	349
440.000	.998	1.00191	.0934	31.770	36413.0	39819.5	222.193	63.23	75.36	354
450.000	.970	1.03125	.0903	32.919	37071.4	40577.6	223.897	64.42	76.27	360
460.000	.943	1.06026	.0874	34.048	37740.2	41345.0	225.584	65.61	77.21	365
470.000	.918	1.08897	.0847	35.158	38419.4	42121.9	227.254	66.80	78.18	369
480.000	.895	1.11742	.0822	36.250	39109.3	42908.6	228.910	67.98	79.15	374
490.000	.873	1.14563	.0799	37.328	39809.9	43705.0	230.553	69.14	80.14	379
500.000	.852	1.17361	.0777	38.391	40521.1	44511.4	232.182	70.30	81.14	383
520.000	.814	1.22901	.0738	40.480	41975.6	46154.2	235.403	72.59	83.14	392
540.000	.779	1.28373	.0702	42.526	43472.4	47837.1	238.578	74.83	85.15	401
560.000	.747	1.33783	.0670	44.535	45011.2	49560.0	241.711	77.03	87.15	409
580.000	.719	1.39155	.0642	46.512	46591.5	51322.7	244.804	79.18	89.12	417
600.000	.692	1.44479	.0616	48.461	48212.5	53124.8	247.858	81.28	91.08	424
620.000	.668	1.49766	.0592	50.387	49873.5	54965.6	250.876	83.33	93.01	432
640.000	.645	1.55021	.0570	52.291	51574.0	56844.7	253.859	85.34	94.90	439
660.000	.624	1.60248	.0550	54.176	53313.0	58761.5	256.808	87.31	96.77	446
680.000	.604	1.65448	.0531	56.045	55090.0	60715.3	259.724	89.24	98.61	453
700.000	.585	1.70627	.0514	57.899	56904.2	62705.5	262.609	91.12	100.41	460

Table 24. Continued.

ETHANE ISOBAR AT P = 36 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.929	21.701	.04608	30.9937	860.993	5332.0	5497.9	77.144	46.37	67.91	2047
100.000	21.374	.04679	28.5299	791.658	5947.4	6115.8	83.621	45.78	68.29	1981
110.000	21.013	.04759	25.9850	718.711	6628.6	6799.9	90.142	45.14	68.54	1905
120.000	20.651	.04842	23.6507	650.606	7312.1	7486.4	96.115	44.57	68.76	1827
130.000	20.286	.04929	21.5274	587.602	7997.9	8175.4	101.629	44.11	69.03	1748
140.000	19.918	.05021	19.6013	529.511	8686.6	8867.4	106.757	43.78	69.38	1670
150.000	19.545	.05116	17.8539	475.965	9379.2	9563.4	111.559	43.56	69.86	1593
160.000	19.167	.05217	16.2650	426.527	10077.0	10264.9	116.086	43.45	70.46	1516
170.000	18.782	.05324	14.8159	380.786	10781.4	10973.0	120.379	43.43	71.21	1440
180.000	18.389	.05438	13.4886	338.347	11493.8	11689.6	124.475	43.50	72.13	1365
190.000	17.984	.05560	12.2673	298.864	12216.0	12416.2	128.403	43.65	73.23	1291
200.000	17.567	.05693	11.1375	262.042	12949.9	13154.9	132.191	43.86	74.54	1216
210.000	17.133	.05837	10.0861	227.628	13697.7	13907.9	135.865	44.14	76.11	1142
220.000	16.679	.05996	9.1012	195.413	14462.2	14678.0	139.448	44.47	77.99	1067
230.000	16.199	.06173	8.1718	165.227	15246.8	15469.0	142.964	44.87	80.29	991
240.000	15.687	.06375	7.2872	136.925	16056.2	16285.7	146.439	45.33	83.15	913
250.000	15.131	.06609	6.4362	110.387	16897.0	17135.0	149.905	45.87	86.85	833
260.000	14.514	.06890	5.6063	85.496	17781.3	18029.3	153.412	47.15	92.52	746
270.000	13.806	.07243	4.7803	62.119	18728.2	18938.9	157.033	47.87	99.98	656
280.000	12.943	.07726	3.9274	40.035	19769.3	20047.4	160.881	48.84	113.23	555
290.000	11.727	.08527	2.9592	18.571	21014.3	21321.3	165.347	50.35	149.78	428
291.104	11.543	.08663	2.8325	16.139	21179.7	21491.6	165.934	50.62	159.23	410
291.104	2.671	.37435	.3526	4.696	26749.1	26096.7	188.633	54.85	162.87	215
300.000	2.252	.44401	.2706	8.408	27599.3	29197.7	192.567	51.20	102.72	236
310.000	2.000	.50000	.2280	11.294	28329.2	30129.4	195.623	50.62	86.31	253
320.000	1.828	.54704	.2011	13.651	28983.6	30952.9	198.238	50.35	79.22	265
330.000	1.698	.58902	.1817	15.707	29604.2	31724.7	200.613	51.43	75.51	276
340.000	1.593	.62773	.1668	17.563	30208.6	32468.5	202.834	52.22	73.45	286
350.000	1.506	.66412	.1549	19.274	30805.9	33196.7	204.945	53.12	72.33	295
360.000	1.431	.69875	.1449	20.875	31401.5	33917.0	206.974	54.12	71.81	303
370.000	1.366	.73202	.1365	22.388	31998.8	34634.1	208.939	55.17	71.68	311
380.000	1.309	.76419	.1293	23.830	32600.4	35351.5	210.852	56.27	71.84	318
390.000	1.257	.79544	.1229	25.214	33207.9	36071.5	212.722	57.41	72.20	324
400.000	1.211	.82593	.1173	26.547	33822.6	36795.9	214.556	58.56	72.71	331
410.000	1.169	.85578	.1123	27.838	34445.3	37526.1	216.359	59.73	73.34	337
420.000	1.130	.88506	.1078	29.093	35076.8	38263.0	218.135	60.91	74.06	342
430.000	1.094	.91386	.1037	30.315	35717.5	39007.4	219.886	62.10	74.85	348
440.000	1.061	.94224	.1000	31.508	36368.0	39760.1	221.617	63.29	75.69	353
450.000	1.031	.97024	.0966	32.677	37028.5	40521.3	223.327	64.48	76.57	359
460.000	1.002	.99790	.0934	33.823	37699.1	41291.6	225.020	65.66	77.49	364
470.000	.975	1.02527	.0905	34.949	38380.1	42071.1	226.697	66.84	78.43	369
480.000	.950	1.05237	.0878	36.057	39071.6	42860.1	228.358	68.02	79.39	374
490.000	.927	1.07922	.0853	37.149	39773.6	43658.8	230.005	69.18	80.36	378
500.000	.904	1.10585	.0829	38.225	40486.2	44467.3	231.638	70.34	81.34	383
520.000	.863	1.15854	.0786	40.339	41943.1	46113.8	234.866	72.62	83.32	392
540.000	.826	1.21054	.0748	42.406	43442.0	47800.0	238.048	74.86	85.30	400
560.000	.792	1.26198	.0714	44.434	44982.7	49525.8	241.186	77.05	87.28	409
580.000	.762	1.31292	.0683	46.429	46564.6	51291.1	244.283	79.20	89.25	417
600.000	.733	1.36344	.0655	48.394	48187.1	53095.5	247.342	81.30	91.19	424
620.000	.707	1.41353	.0629	50.334	49849.5	54938.4	250.363	83.35	93.11	432
640.000	.683	1.46341	.0606	52.251	51551.1	56819.4	253.349	85.36	95.00	439
660.000	.661	1.51295	.0584	54.149	53291.3	58737.9	256.301	87.33	96.86	446
680.000	.640	1.56223	.0564	56.029	55069.3	60693.3	259.219	89.25	98.69	453

ETHANE ISOBAR AT P = 38 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.961	21.702	.04608	30.9949	861.525	5332.8	5507.9	77.153	46.37	67.90	2048
100.000	21.377	.04678	28.5412	792.497	5945.8	6123.6	83.605	45.79	68.28	1982
110.000	21.016	.04758	25.9971	719.589	6626.8	6807.6	90.125	45.14	68.53	1906
120.000	20.654	.04842	23.6635	651.512	7310.1	7494.0	96.098	44.58	68.75	1828
130.000	20.290	.04929	21.5407	588.528	7995.6	8182.9	101.611	44.12	69.02	1749
140.000	19.922	.05020	19.6151	530.452	8684.[illegible]	8874.8	106.738	43.79	69.37	1671
150.000	19.550	.05115	17.8681	476.920	9376.3	9570.7	111.540	43.57	69.84	1594
160.000	19.172	.05216	16.2797	427.495	10073.8	10272.0	116.065	43.45	70.44	1518
170.000	18.787	.05323	14.8310	381.768	10777.7	10979.9	120.357	43.44	71.19	1442
180.000	18.394	.05436	13.5042	339.345	11489.6	11696.2	124.451	43.51	72.10	1367
190.000	17.991	.05558	12.2835	299.881	12211.3	12422.5	128.378	43.65	73.19	1293
200.000	17.574	.05690	11.1544	263.079	12944.5	13160.7	132.164	43.87	74.49	1218
210.000	17.142	.05834	10.1039	228.690	13691.5	13913.2	135.835	44.14	76.05	1144
220.000	16.689	.05992	9.1201	196.504	14455.0	14682.7	139.414	44.48	77.91	1069
230.000	16.211	.06168	8.1921	166.353	15238.3	15472.7	142.926	44.88	80.18	994
240.000	15.701	.06369	7.3094	138.095	16046.1	16288.1	146.396	45.34	83.00	916
250.000	15.149	.06601	6.4610	111.610	16884.6	17135.5	149.854	45.88	86.62	837
260.000	14.537	.06879	5.6348	86.789	17765.6	18027.0	153.350	47.15	92.17	751
270.000	13.838	.07227	4.8146	63.512	18707.2	18981.8	156.953	47.87	99.34	662
280.000	12.992	.07697	3.9725	41.588	19738.1	20030.6	160.766	48.83	111.77	562
290.000	11.830	.08453	3.0344	20.496	20952.9	21274.1	165.126	50.26	143.35	440
293.601	11.209	.08922	2.6194	12.711	21503.0	21842.0	167.072	51.18	177.33	382
293.601	2.918	.34265	.3940	3.971	26659.6	27961.7	187.926	56.25	190.99	211
300.000	2.511	.39820	.3118	7.048	27369.7	28882.9	191.237	52.30	117.93	229
310.000	2.165	.45761	.2549	10.278	28169.1	29908.0	194.600	51.17	92.22	248
320.000	1.979	.50526	.2218	12.814	28855.8	30775.8	197.356	51.22	82.57	262
330.000	1.828	.54702	.1988	14.988	29496.2	31574.9	199.815	51.70	77.74	273
340.000	1.709	.58513	.1815	16.931	30114.2	32337.7	202.093	52.43	75.08	283
350.000	1.611	.62070	.1678	18.710	30721.6	33080.3	204.245	53.30	73.59	293
360.000	1.528	.65446	.1565	20.366	31325.[illegible]	33811.8	206.306	54.26	72.81	301
370.000	1.456	.68665	.1471	21.927	31928.8	34538.0	208.296	55.30	72.51	309
380.000	1.393	.71774	.1390	23.409	32535.6	35263.1	210.229	56.38	72.54	316
390.000	1.337	.74789	.1320	24.828	33147.6	35989.6	212.116	57.50	72.80	323
400.000	1.287	.77724	.1258	26.192	33766.1	36719.6	213.965	58.65	73.24	329
410.000	1.241	.80593	.1202	27.511	34392.1	37454.7	215.780	59.81	73.80	336
420.000	1.199	.83405	.1153	28.790	35026.6	38196.0	217.566	60.98	74.47	341
430.000	1.161	.86167	.1108	30.035	35670.0	38944.3	219.327	62.16	75.22	347
440.000	1.125	.88886	.1067	31.250	36322.8	39700.4	221.065	63.35	76.02	353
450.000	1.092	.91566	.1030	32.437	36985.3	40464.9	222.783	64.53	76.87	358
460.000	1.061	.94213	.0996	33.601	37657.9	41238.0	224.482	65.71	77.76	363
470.000	1.033	.96829	.0964	34.743	38340.7	42020.2	226.164	66.89	78.68	368
480.000	1.006	.99418	.0935	35.867	39033.8	42811.7	227.831	68.06	79.62	373
490.000	.981	1.01982	.0908	36.972	39737.3	43612.6	229.482	69.22	80.57	378
500.000	.957	1.04525	.0882	38.062	40451.2	44423.1	231.120	70.38	81.54	382
520.000	.913	1.09550	.0836	40.200	41910.5	46073.4	234.356	72.65	83.49	391
540.000	.873	1.14508	.0795	42.289	43411.6	47762.9	237.543	74.89	85.46	400
560.000	.837	1.19407	.0758	44.336	44954.2	49491.7	240.687	77.08	87.42	408
580.000	.805	1.24258	.0725	46.348	46537.7	51259.5	243.789	79.22	89.37	416
600.000	.775	1.29066	.0695	48.329	48161.7	53066.2	246.851	81.32	91.30	424
620.000	.747	1.33837	.0667	50.283	49825.5	54911.3	249.876	83.37	93.21	432
640.000	.722	1.38576	.0642	52.214	51528.3	56794.2	252.865	85.38	95.09	439
660.000	.698	1.43286	.0619	54.124	53269.6	58714.5	255.819	87.34	96.94	446
680.000	.676	1.47971	.0598	56.015	55048.6	60671.5	258.740	89.27	98.76	453
700.000	.655	1.52633	.0578	57.889	56864.6	62664.7	261.629	91.15	100.55	460

Table 24. Continued.

ETHANE ISOBAR AT P = 40 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
90.993	21.703	.04608	30.9962	862.057	5333.6	5517.9	77.161	46.37	67.90	2048
100.000	21.379	.04677	28.5524	793.334	5944.3	6131.4	83.589	45.79	68.27	1983
110.000	21.019	.04758	26.0092	720.468	6625.0	6815.3	90.109	45.15	68.53	1906
120.000	20.657	.04841	23.6763	652.418	7308.0	7501.7	96.081	44.58	68.74	1829
130.000	20.293	.04928	21.5540	589.453	7993.3	8190.4	101.593	44.13	69.01	1750
140.000	19.925	.05019	19.6289	531.393	8681.5	8882.2	106.720	43.79	69.36	1673
150.000	19.554	.05114	17.8823	477.874	9373.5	9578.0	111.520	43.57	69.82	1595
160.000	19.177	.05215	16.2943	428.463	10070.5	10279.1	116.045	43.46	70.42	1519
170.000	18.793	.05321	14.8461	382.750	10774.0	10986.8	120.335	43.44	71.16	1443
180.000	18.400	.05435	13.5198	340.342	11485.5	11702.8	124.428	43.51	72.07	1369
190.000	17.997	.05556	12.2997	300.895	12206.6	12428.8	128.352	43.66	73.15	1294
200.000	17.582	.05688	11.1713	264.114	12939.1	13166.6	132.136	43.87	74.45	1220
210.000	17.150	.05831	10.1216	229.750	13685.3	13918.6	135.805	44.15	75.99	1146
220.000	16.699	.05988	9.1390	197.595	14447.8	14687.3	139.381	44.49	77.83	1072
230.000	16.223	.06164	8.2124	167.476	15229.9	15476.4	142.889	44.88	80.07	996
240.000	15.716	.06363	7.3315	139.260	16036.0	16290.6	146.353	45.34	82.85	919
250.000	15.166	.06593	6.4856	112.827	16872.4	17136.1	149.804	45.88	86.40	840
260.000	14.560	.06868	5.6630	88.075	17750.2	18024.9	153.289	47.16	91.82	755
270.000	13.869	.07210	4.8484	64.892	18686.7	18975.1	156.875	47.87	98.72	667
280.000	13.040	.07669	4.0162	43.116	19708.0	20014.8	160.654	48.82	110.43	569
290.000	11.923	.08387	3.1039	22.342	20896.5	21232.0	164.923	50.19	138.15	452
295.995	10.847	.09219	2.4072	9.616	21834.9	22203.6	168.237	51.84	203.43	354
295.995	3.197	.31280	.4417	3.238	26545.7	27796.9	187.144	57.86	232.33	207
300.000	2.830	.35336	.3650	5.534	27091.1	28504.5	189.725	53.83	144.03	221
310.000	2.391	.41831	.2856	9.219	27993.7	29667.0	193.541	51.80	99.80	243
320.000	2.141	.46713	.2445	11.958	28720.5	30589.0	196.469	51.61	86.51	258
330.000	1.965	.50894	.2171	14.260	29383.6	31419.4	199.024	51.99	80.25	270
340.000	1.829	.54662	.1970	16.294	30016.8	32203.3	201.365	52.65	76.85	281
350.000	1.720	.58153	.1814	18.145	30635.2	32961.3	203.562	53.48	74.93	290
360.000	1.628	.61442	.1687	19.859	31247.1	33704.7	205.656	54.41	73.88	299
370.000	1.549	.64577	.1581	21.467	31857.6	34440.7	207.673	55.43	73.38	307
380.000	1.479	.67592	.1490	22.990	32470.0	35173.6	209.627	56.49	73.27	314
390.000	1.418	.70508	.1413	24.444	33086.6	35906.9	211.532	57.60	73.42	321
400.000	1.363	.73342	.1344	25.840	33709.0	36642.7	213.395	58.73	73.78	328
410.000	1.314	.76108	.1284	27.187	34338.6	37382.9	215.223	59.88	74.28	334
420.000	1.269	.78814	.1229	28.491	34976.0	38128.6	217.020	61.05	74.89	340
430.000	1.227	.81471	.1181	29.759	35622.1	38880.9	218.790	62.23	75.59	346
440.000	1.189	.84083	.1136	30.994	36277.3	39640.6	220.536	63.40	76.36	352
450.000	1.154	.86656	.1096	32.201	36942.0	40408.3	222.261	64.58	77.18	357
460.000	1.121	.89195	.1059	33.382	37616.6	41184.3	223.967	65.76	78.04	362
470.000	1.090	.91703	.1024	34.541	38301.1	41969.2	225.655	66.93	78.94	368
480.000	1.062	.94183	.0993	35.679	38995.8	42763.1	227.326	68.10	79.86	373
490.000	1.035	.96639	.0963	36.799	39700.8	43566.4	228.983	69.26	80.79	377
500.000	1.009	.99072	.0936	37.902	40416.1	44379.0	230.624	70.41	81.74	382
520.000	.963	1.03879	.0886	40.064	41877.9	46033.1	233.868	72.69	83.67	391
540.000	.921	1.08617	.0842	42.174	43381.2	47725.9	237.062	74.92	85.61	400
560.000	.883	1.13298	.0802	44.240	44925.6	49457.6	240.211	77.10	87.56	408
580.000	.848	1.17930	.0767	46.269	46510.9	51228.1	243.317	79.24	89.49	416
600.000	.816	1.22518	.0735	48.266	48136.3	53037.1	246.383	81.34	91.41	424
620.000	.787	1.27070	.0705	50.235	49801.4	54884.2	249.411	83.39	93.31	432
640.000	.760	1.31589	.0679	52.178	51505.5	56769.1	252.403	85.40	95.18	439
660.000	.735	1.36079	.0654	54.100	53247.9	58691.1	255.360	87.36	97.02	447
680.000	.712	1.40545	.0631	56.002	55027.9	60649.7	258.284	89.28	98.84	454
700.000	.690	1.44987	.0610	57.887	56844.9	62644.4	261.175	91.16	100.63	460

Table 24. Continued.

Table 24. Continued.

ETHANE ISOBAR AT P = 42 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
91.025	21.705	.04607	30.9974	862.590	5334.4	5527.9	77.170	46.38	67.90	2049
100.000	21.382	.04677	28.5636	794.171	5942.7	6139.2	83.574	45.80	68.27	1984
110.000	21.022	.04757	26.0213	721.346	6623.3	6823.1	90.093	45.15	68.52	1907
120.000	20.660	.04840	23.6890	653.323	7306.0	7509.3	96.064	44.59	68.74	1830
130.000	20.296	.04927	21.5673	590.378	7991.1	8198.0	101.576	44.13	69.00	1751
140.000	19.929	.05018	19.6426	532.333	8678.9	8889.7	106.701	43.80	69.35	1674
150.000	19.558	.05113	17.8965	478.828	9370.6	9585.3	111.500	43.58	69.81	1597
160.000	19.181	.05213	16.3089	429.430	10067.2	10286.2	116.024	43.47	70.40	1520
170.000	18.798	.05320	14.8611	383.731	10770.3	10993.8	120.313	43.45	71.14	1445
180.000	18.406	.05433	13.5354	341.338	11481.3	11709.5	124.404	43.52	72.04	1370
190.000	18.004	.05554	12.3158	301.909	12201.9	12435.1	128.327	43.67	73.11	1296
200.000	17.589	.05685	11.1881	265.149	12933.8	13172.6	132.109	43.88	74.40	1222
210.000	17.159	.05828	10.1393	230.808	13679.2	13923.9	135.775	44.16	75.93	1148
220.000	16.709	.05985	9.1578	198.681	14440.7	14692.0	139.348	44.49	77.75	1074
230.000	16.235	.06159	8.2326	168.597	15221.5	15480.2	142.851	44.89	79.97	999
240.000	15.730	.06357	7.3534	140.421	16026.1	16293.1	146.310	45.35	82.70	922
250.000	15.184	.06586	6.5100	114.040	16860.3	17136.9	149.754	45.89	86.19	843
260.000	14.582	.06858	5.6909	89.353	17734.9	18022.9	153.229	47.16	91.48	759
270.000	13.899	.07195	4.8816	66.260	18666.5	18968.7	156.798	47.88	98.14	672
280.000	13.085	.07642	4.0588	44.622	19678.9	19999.9	160.546	48.81	109.18	576
290.000	12.009	.08327	3.1689	24.124	20844.3	21194.0	164.734	50.13	133.83	462
298.293	10.445	.09574	2.1923	6.841	22182.6	22584.7	169.456	52.69	244.77	325
298.293	3.520	.28412	.4982	2.499	26398.7	27592.0	186.254	59.81	299.03	203
300.000	3.263	.30645	.4420	3.753	26718.9	28006.0	187.843	56.39	203.07	212
310.000	2.622	.38145	.3213	8.111	27798.8	29400.9	192.424	52.52	109.93	237
320.000	2.314	.43208	.2695	11.084	28576.3	30391.1	195.569	52.03	91.18	254
330.000	2.109	.47419	.2369	13.524	29266.0	31257.6	198.237	52.29	83.07	267
340.000	1.955	.51160	.2135	15.655	29916.2	32064.9	200.647	52.88	78.80	278
350.000	1.832	.54597	.1956	17.579	30546.5	32839.6	202.892	53.66	76.38	288
360.000	1.730	.57817	.1813	19.351	31167.5	33595.8	205.023	54.57	75.01	297
370.000	1.643	.60875	.1695	21.008	31785.2	34341.9	207.067	55.56	74.30	305
380.000	1.567	.63803	.1594	22.573	32403.4	35083.2	209.044	56.61	74.03	313
390.000	1.501	.66633	.1508	24.063	33024.9	35823.5	210.967	57.70	74.07	320
400.000	1.441	.69377	.1433	25.491	33651.4	36565.3	212.845	58.82	74.33	327
410.000	1.388	.72050	.1367	26.865	34284.5	37310.6	214.685	59.96	74.76	333
420.000	1.339	.74662	.1308	28.195	34925.1	38060.9	216.493	61.12	75.32	339
430.000	1.295	.77223	.1255	29.485	35573.9	38817.3	218.273	62.29	75.98	345
440.000	1.254	.79739	.1206	30.741	36231.6	39580.6	220.028	63.46	76.71	351
450.000	1.216	.82215	.1162	31.967	36898.5	40351.5	221.760	64.64	77.49	357
460.000	1.181	.84656	.1122	33.166	37575.0	41130.6	223.472	65.81	78.33	362
470.000	1.149	.87066	.1085	34.341	38261.4	41918.2	225.166	66.98	79.20	367
480.000	1.118	.89448	.1051	35.494	38957.8	42714.6	226.843	68.14	80.10	372
490.000	1.089	.91806	.1019	36.628	39664.3	43520.1	228.504	69.30	81.01	377
500.000	1.062	.94140	.0990	37.744	40381.0	44334.9	230.150	70.45	81.95	382
520.000	1.013	.98749	.0936	39.930	41845.3	45992.8	233.401	72.72	83.85	391
540.000	.968	1.03290	.0889	42.061	43350.7	47688.9	236.601	74.95	85.77	400
560.000	.928	1.07772	.0847	44.147	44897.1	49423.5	239.755	77.13	87.70	408
580.000	.891	1.12205	.0809	46.193	46484.0	51196.6	242.866	79.27	89.62	416
600.000	.858	1.16595	.0775	48.205	48111.0	53008.0	245.936	81.36	91.52	424
620.000	.827	1.20948	.0744	50.188	49777.4	54857.2	248.968	83.41	93.41	432
640.000	.798	1.25269	.0715	52.145	51482.7	56744.0	251.963	85.41	95.27	439
660.000	.772	1.29560	.0689	54.078	53226.2	58667.8	254.923	87.38	97.11	447
680.000	.747	1.33827	.0665	55.992	55007.3	60628.0	257.849	89.30	98.92	454
700.000	.724	1.38071	.0643	57.887	56825.2	62624.1	260.742	91.17	100.70	461

Table 24. Continued.

ETHANE ISOBAR AT P = 44 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
91.057	21.706	.04607	30.9987	863.122	5335.2	5537.9	77.179	46.38	67.90	2049
100.000	21.384	.04676	28.5749	795.008	5941.2	6146.9	83.558	45.80	68.26	1985
110.000	21.025	.04756	26.0334	722.223	6621.5	6830.8	90.076	45.16	68.51	1908
120.000	20.663	.04840	23.7018	654.228	7304.0	7517.0	96.047	44.59	68.73	1831
130.000	20.300	.04926	21.5806	591.302	7988.8	8205.5	101.558	44.14	68.99	1753
140.000	19.933	.05017	19.6564	533.273	8676.4	8897.1	106.682	43.80	69.33	1675
150.000	19.562	.05112	17.9106	479.781	9367.7	9592.6	111.481	43.59	69.79	1598
160.000	19.186	.05212	16.3235	430.396	10064.0	10293.3	116.003	43.47	70.38	1522
170.000	18.803	.05318	14.8761	384.711	10766.7	11000.7	120.292	43.46	71.12	1446
180.000	18.412	.05431	13.5509	342.333	11477.2	11716.2	124.381	43.53	72.01	1372
190.000	18.011	.05552	12.3320	302.922	12197.2	12441.5	128.302	43.67	73.08	1298
200.000	17.597	.05683	11.2049	266.182	12928.4	13178.5	132.082	43.89	74.35	1224
210.000	17.168	.05825	10.1570	231.864	13673.1	13929.3	135.745	44.17	75.87	1150
220.000	16.719	.05981	9.1765	199.766	14433.6	14696.7	139.315	44.50	77.68	1076
230.000	16.247	.06155	8.2526	169.715	15213.2	15484.0	142.815	44.90	79.86	1001
240.000	15.744	.06351	7.3753	141.579	16016.2	16295.7	146.268	45.36	82.56	925
250.000	15.202	.06578	6.5343	115.247	16848.3	17137.7	149.705	45.90	85.98	847
260.000	14.604	.06847	5.7185	90.624	17719.9	18021.2	153.170	47.17	91.16	763
270.000	13.929	.07179	4.9143	67.617	18646.8	18962.7	156.722	47.88	97.58	676
280.000	13.129	.07617	4.1002	46.108	19650.7	19985.8	160.442	48.81	108.03	582
290.000	12.089	.08272	3.2302	25.852	20795.5	21159.4	164.558	50.08	130.16	472
300.000	10.180	.09823	2.0670	5.565	22420.8	22853.0	170.288	53.25	275.47	309
300.499	9.977	.10023	1.9686	4.380	22559.7	23000.7	170.780	53.87	320.97	294
300.499	3.911	.25566	.5684	1.754	26202.6	27327.6	185.191	62.39	424.34	199
310.000	2.888	.34631	.3637	6.945	27577.6	29101.4	191.223	53.37	124.20	231
320.000	2.502	.39961	.2973	10.191	28421.9	30180.1	194.650	52.49	96.82	250
330.000	2.261	.44229	.2582	12.780	29142.9	31089.0	197.448	52.60	86.28	264
340.000	2.085	.47963	.2311	15.013	29812.0	31922.3	199.936	53.11	80.93	275
350.000	1.947	.51355	.2107	17.013	30455.6	32715.2	202.234	53.85	77.93	286
360.000	1.834	.54516	.1945	18.846	31086.3	33485.0	204.403	54.72	76.20	295
370.000	1.739	.57506	.1813	20.552	31711.5	34241.8	206.476	55.69	75.26	303
380.000	1.657	.60361	.1702	22.159	32335.9	34991.8	208.477	56.72	74.82	311
390.000	1.585	.63110	.1607	23.685	32962.4	35739.3	210.418	57.80	74.73	319
400.000	1.520	.65772	.1525	25.144	33593.3	36487.2	212.312	58.91	74.90	326
410.000	1.463	.68361	.1452	26.547	34230.0	37237.9	214.165	60.04	75.26	332
420.000	1.411	.70888	.1388	27.902	34873.8	37992.9	215.985	61.19	75.76	338
430.000	1.363	.73362	.1330	29.215	35525.5	38753.4	217.774	62.35	76.37	344
440.000	1.319	.75791	.1278	30.492	36185.6	39520.4	219.538	63.52	77.06	350
450.000	1.279	.78179	.1230	31.737	36854.8	40294.7	221.278	64.69	77.81	356
460.000	1.242	.80532	.1187	32.953	37533.4	41076.8	222.996	65.86	78.62	361
470.000	1.207	.82853	.1147	34.144	38221.6	41867.1	224.696	67.02	79.46	366
480.000	1.174	.85146	.1111	35.313	38919.6	42666.0	226.378	68.18	80.34	371
490.000	1.144	.87414	.1076	36.461	39627.7	43473.9	228.044	69.34	81.24	376
500.000	1.115	.89658	.1045	37.590	40345.8	44290.8	229.694	70.48	82.15	381
520.000	1.063	.94088	.0987	39.799	41812.6	45952.5	232.953	72.75	84.03	390
540.000	1.016	.98445	.0937	41.952	43320.2	47652.0	236.159	74.97	85.93	399
560.000	.973	1.02750	.0892	44.056	44868.5	49389.5	239.319	77.15	87.84	408
580.000	.935	1.07003	.0852	46.119	46457.1	51165.3	242.434	79.29	89.74	416
600.000	.899	1.11212	.0816	48.147	48085.6	52979.0	245.508	81.38	91.63	424
620.000	.867	1.15384	.0783	50.144	49753.4	54830.3	248.544	83.43	93.51	432
640.000	.837	1.19524	.0752	52.113	51460.0	56719.0	251.542	85.43	95.36	439
660.000	.809	1.23635	.0725	54.059	53204.6	58644.5	254.504	87.39	97.19	447
680.000	.783	1.27721	.0699	55.983	54986.7	60606.4	257.432	89.31	98.99	454
700.000	.759	1.31784	.0675	57.888	56805.5	62604.0	260.328	91.19	100.77	461

ETHANE ISOBAR AT P = 46 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
91.090	21.707	.04607	30.9999	863.654	5336.0	5547.9	77.188	46.38	67.89	2050
100.000	21.387	.04676	28.5861	795.843	5939.6	6154.7	83.542	45.81	68.26	1985
110.000	21.027	.04755	26.0455	723.100	6619.7	6838.5	90.060	45.17	68.50	1909
120.000	20.666	.04839	23.7146	655.132	7302.0	7524.6	96.030	44.60	68.72	1832
130.000	20.303	.04925	21.5939	592.226	7986.5	8213.1	101.540	44.15	68.98	1754
140.000	19.937	.05016	19.6701	534.212	8673.8	8904.5	106.664	43.81	69.32	1676
150.000	19.566	.05111	17.9248	480.733	9364.8	9599.9	111.461	43.59	69.78	1599
160.000	19.191	.05211	16.3381	431.362	10060.8	10300.5	115.983	43.48	70.36	1523
170.000	18.808	.05317	14.8912	385.690	10763.0	11007.6	120.270	43.46	71.09	1448
180.000	18.418	.05430	13.5664	343.328	11473.1	11722.8	124.358	43.53	71.98	1373
190.000	18.017	.05550	12.3480	303.934	12192.5	12447.8	128.277	43.68	73.04	1300
200.000	17.604	.05680	11.2217	267.213	12923.1	13184.4	132.055	43.90	74.31	1226
210.000	17.176	.05822	10.1746	232.919	13667.0	13934.8	135.715	44.17	75.81	1152
220.000	16.729	.05977	9.1951	200.848	14426.5	14701.5	139.282	44.51	77.60	1079
230.000	16.259	.06150	8.2726	170.830	15205.0	15487.9	142.778	44.91	79.76	1004
240.000	15.758	.06346	7.3970	142.734	16006.4	16298.3	146.226	45.37	82.42	928
250.000	15.219	.06571	6.5583	116.450	16836.4	17138.6	149.656	45.91	85.77	850
260.000	14.626	.06837	5.7458	91.687	17705.1	18019.6	153.111	47.18	90.84	767
270.000	13.958	.07164	4.9465	68.963	18627.4	18957.0	156.648	47.88	97.05	681
280.000	13.172	.07592	4.1407	47.574	19623.3	19972.6	160.340	48.80	106.96	588
290.000	12.164	.08221	3.2882	27.533	20749.6	21127.8	164.392	50.04	127.00	482
300.000	10.476	.09546	2.2240	8.065	22255.1	22694.2	169.694	52.52	220.18	335
302.615	9.385	.10656	1.7224	2.241	22998.4	23438.5	172.329	55.90	510.71	260
302.615	4.430	.22575	.6631	1.004	25919.2	26957.6	183.805	66.41	742.20	193
310.000	3.204	.31207	.4159	5.707	27319.0	28754.5	189.892	54.42	145.91	225
320.000	2.708	.36927	.3285	9.278	28255.0	29953.7	193.703	52.99	103.74	245
330.000	2.422	.41284	.2813	12.030	29013.5	30912.6	196.654	52.93	89.94	260
340.000	2.221	.45023	.2498	14.369	29704.2	31775.1	199.230	53.36	83.28	273
350.000	2.067	.48384	.2265	16.447	30362.1	32587.8	201.586	54.04	79.60	283
360.000	1.942	.51496	.2083	18.341	31003.3	33372.1	203.795	54.88	77.47	293
370.000	1.837	.54426	.1936	20.098	31636.6	34140.2	205.900	55.82	76.26	302
380.000	1.748	.57215	.1813	21.747	32267.4	34899.3	207.924	56.83	75.64	310
390.000	1.670	.59893	.1709	23.310	32899.2	35654.3	209.885	57.89	75.42	317
400.000	1.600	.62481	.1619	24.801	33534.5	36408.6	211.795	58.99	75.49	324
410.000	1.539	.64994	.1540	26.232	34175.1	37164.8	213.662	60.12	75.77	331
420.000	1.483	.67443	.1470	27.612	34822.2	37924.6	215.493	61.26	76.21	337
430.000	1.432	.69839	.1407	28.948	35476.7	38689.3	217.292	62.42	76.76	344
440.000	1.385	.72188	.1351	30.246	36139.5	39460.1	219.064	63.58	77.41	349
450.000	1.342	.74495	.1300	31.510	36810.9	40237.7	220.812	64.74	78.13	355
460.000	1.303	.76767	.1253	32.744	37491.5	41022.8	222.537	65.91	78.91	361
470.000	1.266	.79008	.1210	33.951	38181.6	41815.9	224.243	67.07	79.73	366
480.000	1.231	.81219	.1171	35.134	38881.4	42617.4	225.930	68.23	80.58	371
490.000	1.199	.83405	.1134	36.296	39591.0	43427.6	227.601	69.38	81.46	376
500.000	1.169	.85568	.1100	37.438	40310.5	44246.7	229.256	70.52	82.36	381
520.000	1.113	.89834	.1039	39.671	41779.9	45912.3	232.522	72.78	84.21	390
540.000	1.063	.94029	.0986	41.845	43289.7	47615.1	235.735	75.00	86.08	399
560.000	1.019	.98167	.0938	43.968	44840.0	49355.6	238.900	77.18	87.97	408
580.000	.978	1.02254	.0895	46.043	46430.3	51134.0	242.020	79.31	89.86	416
600.000	.941	1.06295	.0857	48.091	48060.3	52950.0	245.098	81.40	91.74	424
620.000	.907	1.10306	.0822	50.101	49729.5	54803.5	248.136	83.45	93.61	432
640.000	.875	1.14280	.0790	52.083	51437.2	56694.1	251.138	85.45	95.45	439
660.000	.846	1.18226	.0760	54.041	53183.0	58621.4	254.103	87.41	97.27	447
680.000	.819	1.22147	.0733	55.976	54966.1	60584.8	257.033	89.32	99.07	454
700.000	.793	1.26045	.0708	57.891	56785.8	62583.9	259.931	91.20	100.84	461

Table 24. Continued.

ETHANE ISOBAR AT P = 48 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
91.122	21.708	.04607	31.0012	864.187	5336.8	5558.0	77.196	46.39	67.89	2050
100.000	21.389	.04675	28.5973	796.679	5938.1	6162.5	83.527	45.81	68.25	1986
110.000	21.030	.04755	26.0576	723.976	6618.0	6846.2	90.044	45.17	68.50	1910
120.000	20.669	.04838	23.7273	656.035	7300.0	7532.3	96.013	44.61	68.71	1833
130.000	20.306	.04925	21.6071	593.149	7984.3	8220.6	101.522	44.15	68.97	1755
140.000	19.940	.05015	19.6838	535.151	8671.3	8912.0	106.645	43.82	69.31	1677
150.000	19.570	.05110	17.9389	481.685	9361.9	9607.2	111.442	43.60	69.76	1601
160.000	19.195	.05210	16.3526	432.327	10057.5	10307.6	115.962	43.49	70.35	1525
170.000	18.813	.05315	14.9061	386.668	10759.4	11014.5	120.248	43.47	71.07	1449
180.000	18.424	.05428	13.5819	344.321	11468.9	11729.5	124.334	43.54	71.95	1375
190.000	18.024	.05548	12.3641	304.944	12187.8	12454.2	128.252	43.69	73.01	1301
200.000	17.612	.05678	11.2384	268.243	12917.8	13190.4	132.028	43.90	74.26	1228
210.000	17.185	.05819	10.1921	233.972	13660.9	13940.2	135.686	44.18	75.75	1155
220.000	16.739	.05974	9.2137	201.928	14419.5	14706.2	139.250	44.52	77.52	1081
230.000	16.271	.06146	8.2925	171.942	15196.8	15491.8	142.741	44.91	79.66	1007
240.000	15.772	.06340	7.4186	143.684	15996.7	16301.0	146.185	45.37	82.28	931
250.000	15.236	.06563	6.5822	117.648	16824.6	17139.7	149.608	45.91	85.57	853
260.000	14.648	.06827	5.7729	93.145	17690.4	18018.1	153.053	47.18	90.54	770
270.000	13.987	.07149	4.9782	70.298	18608.4	18951.6	156.575	47.89	96.54	686
280.000	13.213	.07568	4.1801	49.022	19596.7	19960.0	160.241	48.80	105.96	594
290.000	12.235	.08173	3.3435	29.174	20706.3	21098.6	164.235	50.00	124.24	490
300.000	10.694	.09351	2.3452	10.267	22130.4	22579.3	169.248	52.13	192.65	355
304.637	8.406	.11896	1.3976	.480	23640.0	24211.0	174.634	62.46	1816.95	215
304.637	5.324	.18782	.8280	.254	25387.0	26288.5	181.465	77.30	2977.41	180
310.000	3.603	.27758	.4835	4.382	27001.9	28334.3	188.347	55.79	183.20	218
320.000	2.935	.34070	.3638	8.347	28073.3	29708.6	192.715	53.55	112.45	241
330.000	2.594	.38552	.3065	11.274	28877.2	30727.6	195.852	53.28	94.15	257
340.000	2.364	.42308	.2697	13.724	29592.3	31623.1	198.526	53.61	85.87	270
350.000	2.191	.45651	.2432	15.882	30266.1	32457.3	200.944	54.24	81.40	281
360.000	2.052	.48722	.2228	17.839	30918.5	33257.2	203.198	55.04	78.81	291
370.000	1.938	.51593	.2064	19.647	31560.4	34037.1	205.335	55.95	77.31	300
380.000	1.841	.54329	.1929	21.339	32197.9	34805.7	207.384	56.95	76.50	308
390.000	1.756	.56943	.1814	22.938	32835.3	35568.5	209.366	57.99	76.14	316
400.000	1.682	.59464	.1716	24.461	33475.2	36329.5	211.292	59.08	76.10	323
410.000	1.615	.61908	.1630	25.921	34119.7	37091.3	213.173	60.20	76.29	330
420.000	1.556	.64286	.1554	27.326	34770.2	37855.9	215.016	61.33	76.67	337
430.000	1.501	.66610	.1486	28.685	35427.7	38625.0	216.825	62.48	77.17	343
440.000	1.452	.68886	.1425	30.003	36093.0	39399.6	218.606	63.63	77.77	349
450.000	1.406	.71121	.1370	31.286	36766.8	40180.6	220.361	64.79	78.46	354
460.000	1.364	.73319	.1320	32.537	37449.5	40968.8	222.094	65.95	79.20	360
470.000	1.325	.75484	.1274	33.760	38141.5	41764.8	223.805	67.11	80.00	365
480.000	1.288	.77621	.1232	34.959	38843.0	42568.8	225.498	68.27	80.83	371
490.000	1.254	.79733	.1193	36.134	39554.2	43381.3	227.174	69.41	81.69	376
500.000	1.222	.81821	.1157	37.289	40275.2	44202.6	228.833	70.56	82.57	380
520.000	1.164	.85935	.1092	39.546	41747.2	45872.1	232.106	72.81	84.39	390
540.000	1.111	.89986	.1035	41.740	43259.2	47578.3	235.326	75.03	86.24	399
560.000	1.064	.93967	.0984	43.882	44811.4	49321.8	238.496	77.20	88.11	408
580.000	1.021	.97903	.0939	45.979	46403.4	51102.8	241.621	79.33	89.99	416
600.000	.982	1.01796	.0898	48.037	48035.0	52921.2	244.703	81.42	91.86	424
620.000	.947	1.05652	.0861	50.061	49705.5	54776.8	247.745	83.46	93.71	432
640.000	.913	1.09475	.0827	52.056	51414.5	56669.3	250.749	85.46	95.54	439
660.000	.883	1.13270	.0796	54.025	53161.4	58598.3	253.717	87.42	97.36	447
680.000	.854	1.17039	.0768	55.970	54945.5	60563.4	256.650	89.34	99.15	454
700.000	.828	1.20786	.0741	57.895	56766.2	62563.9	259.550	91.21	100.91	461

Table 24. Continued.

ETHANE ISOBAR AT P = 50 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
91.154	21.709	.04606	31.0025	864.719	5337.6	5568.0	77.205	46.39	67.89	2051
100.000	21.392	.04675	28.6085	797.514	5936.6	6170.3	83.511	45.82	68.25	1987
110.000	21.033	.04754	26.0697	724.852	6616.2	6853.9	90.028	45.18	68.49	1911
120.000	20.672	.04837	23.7400	656.939	7298.0	7539.9	95.996	44.61	68.70	1834
130.000	20.310	.04924	21.6204	594.072	7982.0	8228.2	101.505	44.16	68.96	1756
140.000	19.944	.05014	19.6975	536.089	8668.7	8919.4	106.627	43.82	69.30	1679
150.000	19.575	.05109	17.9531	482.637	9359.1	9614.5	111.422	43.60	69.75	1602
160.000	19.200	.05208	16.3672	433.291	10054.3	10314.7	115.942	43.49	70.33	1526
170.000	18.819	.05314	14.9211	387.646	10755.7	11021.4	120.226	43.48	71.05	1451
180.000	18.429	.05426	13.5974	345.314	11464.9	11736.2	124.311	43.55	71.92	1377
190.000	18.030	.05545	12.3801	305.953	12183.2	12460.5	128.227	43.69	72.97	1303
200.000	17.619	.05675	11.2551	269.272	12912.5	13196.3	132.001	43.91	74.22	1230
210.000	17.193	.05816	10.2096	235.024	13654.8	13945.6	135.656	44.19	75.69	1157
220.000	16.749	.05971	9.2322	203.006	14412.9	14711.0	139.217	44.52	77.45	1083
230.000	16.282	.06142	8.3123	173.051	15188.6	15495.7	142.705	44.92	79.56	1009
240.000	15.786	.06333	7.4401	145.032	15987.0	16303.8	146.143	45.38	82.14	934
250.000	15.253	.06556	6.6059	118.841	16813.0	17140.8	149.560	45.92	85.38	857
260.000	14.669	.06817	5.7996	94.395	17676.0	18016.8	152.995	47.19	90.24	774
270.000	14.015	.07135	5.0095	71.624	18589.7	18946.5	156.503	47.89	96.05	691
280.000	13.254	.07545	4.2187	50.454	19570.9	19948.1	160.145	48.79	105.02	600
290.000	12.302	.08129	3.3965	30.779	20665.1	21071.6	164.085	49.97	121.30	499
300.000	10.872	.09198	2.4472	12.296	22028.1	22438.0	168.882	51.89	175.50	371
310.000	4.154	.24074	.5798	2.949	26578.2	27781.9	186.397	57.74	262.57	211
320.000	3.189	.31353	.4043	7.399	27873.1	29440.7	191.674	54.15	123.66	237
330.000	2.778	.36003	.3340	10.514	28732.9	30533.1	195.037	53.64	99.03	254
340.000	2.513	.39795	.2910	13.079	29476.1	31465.8	197.822	53.87	88.74	267
350.000	2.319	.43127	.2608	15.320	30167.3	32323.6	200.309	54.44	83.34	279
360.000	2.166	.46165	.2379	17.340	30831.9	33140.1	202.609	55.20	80.24	289
370.000	2.041	.48998	.2197	19.199	31482.8	33932.6	204.780	56.09	78.42	298
380.000	1.935	.51673	.2048	20.934	32127.5	34711.1	206.856	57.06	77.39	307
390.000	1.844	.54229	.1922	22.570	32770.6	35482.0	208.859	58.10	76.87	315
400.000	1.764	.56689	.1815	24.125	33415.3	36249.7	210.803	59.17	76.72	322
410.000	1.693	.59069	.1722	25.613	34063.8	37017.3	212.698	60.27	76.83	329
420.000	1.629	.61383	.1640	27.043	34717.8	37786.9	214.553	61.40	77.13	336
430.000	1.571	.63641	.1567	28.425	35378.3	38560.4	216.372	62.54	77.58	342
440.000	1.519	.65850	.1501	29.764	36046.4	39338.9	218.162	63.69	78.14	348
450.000	1.470	.68017	.1442	31.065	36722.5	40123.4	219.925	64.85	78.79	354
460.000	1.426	.70147	.1389	32.334	37407.4	40914.8	221.664	66.00	79.50	359
470.000	1.384	.72245	.1339	33.573	38101.3	41713.5	223.382	67.16	80.27	365
480.000	1.346	.74313	.1294	34.786	38804.5	42520.2	225.081	68.31	81.08	370
490.000	1.310	.76355	.1253	35.975	39517.3	43335.1	226.761	69.45	81.92	375
500.000	1.276	.78374	.1214	37.143	40239.8	44158.5	228.424	70.59	82.78	380
520.000	1.214	.82351	.1145	39.423	41714.4	45831.9	231.706	72.84	84.57	390
540.000	1.159	.86257	.1084	41.638	43228.7	47541.5	234.932	75.06	86.40	399
560.000	1.110	.90104	.1031	43.798	44782.8	49288.0	238.107	77.23	88.25	407
580.000	1.065	.93901	.0983	45.912	46376.6	51071.6	241.236	79.36	90.11	416
600.000	1.024	.97655	.0940	47.985	48009.6	52892.4	244.323	81.44	91.97	424
620.000	.966	1.01371	.0900	50.023	49681.6	54750.1	247.368	83.48	93.81	432
640.000	.952	1.05055	.0865	52.030	51391.8	56644.6	250.375	85.48	95.64	439
660.000	.920	1.08710	.0832	54.010	53139.8	58575.3	253.346	87.44	97.44	447
680.000	.890	1.12341	.0802	55.967	54924.9	60542.0	256.281	89.35	99.22	454
700.000	.862	1.15948	.0775	57.901	56746.6	62544.0	259.183	91.23	100.98	461

Table 24. Continued.

ETHANE ISOBAR AT P = 52 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
91.186	21.710	.04606	31.0038	865.251	5338.4	5578.0	77.214	46.39	67.88	2051
100.000	21.394	.04674	28.6197	798.348	5935.0	6178.1	83.495	45.83	68.24	1988
110.000	21.036	.04754	26.0817	725.727	6614.5	6861.7	90.011	45.18	68.48	1912
120.000	20.675	.04837	23.7527	657.841	7296.0	7547.5	95.979	44.62	68.69	1835
130.000	20.313	.04923	21.6336	594.994	7979.8	8235.7	101.487	44.16	68.95	1757
140.000	19.948	.05013	19.7112	537.026	8666.2	8926.9	106.608	43.83	69.28	1680
150.000	19.579	.05108	17.9672	483.588	9356.2	9621.8	111.403	43.61	69.73	1603
160.000	19.204	.05207	16.3817	434.255	10051.1	10321.9	115.921	43.50	70.31	1527
170.000	18.824	.05312	14.9361	388.623	10752.1	11028.4	120.204	43.48	71.02	1452
180.000	18.435	.05424	13.6128	346.305	11460.8	11742.8	124.288	43.55	71.89	1378
190.000	18.037	.05544	12.3961	306.961	12178.6	12466.9	128.202	43.70	72.94	1305
200.000	17.627	.05673	11.2717	270.299	12907.3	13202.3	131.974	43.92	74.17	1232
210.000	17.202	.05813	10.2271	236.074	13648.8	13951.1	135.627	44.19	75.64	1159
220.000	16.759	.05967	9.2507	204.082	14405.6	14715.9	139.185	44.53	77.38	1085
230.000	16.294	.06137	8.3320	174.159	15180.5	15499.7	142.669	44.93	79.46	1012
240.000	15.800	.06329	7.4614	146.176	15977.5	16306.6	146.102	45.39	82.00	937
250.000	15.270	.06549	6.6294	120.029	16801.5	17142.0	149.512	45.93	85.19	860
260.000	14.690	.06807	5.8261	95.639	17661.7	18015.7	152.938	47.19	89.95	778
270.000	14.043	.07121	5.0403	72.940	18571.4	18941.6	156.432	47.89	95.58	695
280.000	13.293	.07523	4.2565	51.870	19545.7	19936.8	160.051	48.79	104.14	606
290.000	12.365	.08087	3.4473	32.352	20625.9	21046.4	163.943	49.94	119.62	507
300.000	11.023	.09072	2.5369	14.207	21940.3	22412.1	168.568	51.71	163.56	386
310.000	5.105	.19587	.7496	1.441	25891.1	26909.6	183.442	60.98	524.59	203
320.000	3.479	.28744	.4515	6.441	27649.5	29144.2	190.559	54.83	138.52	232
330.000	2.975	.33613	.3642	9.753	28579.8	30327.7	194.203	54.03	104.74	250
340.000	2.670	.37457	.3139	12.437	29355.1	31302.9	197.116	54.14	91.93	265
350.000	2.452	.40787	.2794	14.760	30065.6	32186.5	199.677	54.64	85.44	277
360.000	2.283	.43799	.2537	16.845	30743.3	33020.8	202.028	55.37	81.76	287
370.000	2.146	.46590	.2335	18.755	31403.9	33826.6	204.235	56.23	79.58	297
380.000	2.032	.49219	.2171	20.533	32056.0	34615.4	206.339	57.18	78.31	305
390.000	1.933	.51723	.2034	22.206	32705.1	35394.7	208.364	58.20	77.64	313
400.000	1.848	.54127	.1917	23.793	33354.8	36169.4	210.325	59.26	77.36	321
410.000	1.771	.56450	.1816	25.309	34007.5	36942.9	212.235	60.35	77.38	328
420.000	1.703	.58704	.1727	26.764	34665.0	37717.7	214.102	61.47	77.61	335
430.000	1.642	.60901	.1649	28.169	35328.7	38495.6	215.932	62.61	78.00	341
440.000	1.586	.63049	.1579	29.528	35999.5	39278.0	217.731	63.75	78.51	347
450.000	1.535	.65154	.1515	30.848	36678.1	40066.1	219.502	64.90	79.12	353
460.000	1.488	.67221	.1458	32.134	37365.1	40860.6	221.248	66.05	79.80	359
470.000	1.444	.69255	.1406	33.389	38060.9	41662.3	222.972	67.20	80.54	364
480.000	1.403	.71261	.1358	34.617	38766.0	42471.5	224.676	68.35	81.33	370
490.000	1.365	.73240	.1313	35.820	39480.4	43288.8	226.361	69.49	82.15	375
500.000	1.330	.75195	.1272	37.000	40204.4	44114.5	228.029	70.63	82.99	380
520.000	1.265	.79043	.1199	39.303	41681.5	45791.8	231.318	72.87	84.75	389
540.000	1.207	.82821	.1134	41.539	43198.1	47504.8	234.551	75.08	86.56	399
560.000	1.156	.86540	.1078	43.717	44754.2	49254.3	237.732	77.25	88.39	407
580.000	1.109	.90208	.1027	45.847	46349.7	51040.5	240.866	79.38	90.24	416
600.000	1.066	.93833	.0982	47.935	47984.3	52863.7	243.956	81.46	92.08	424
620.000	1.026	.97421	.0940	49.987	49657.6	54723.5	247.005	83.50	93.91	432
640.000	.990	1.00977	.0903	52.006	51369.1	56619.9	250.015	85.50	95.73	440
660.000	.957	1.04503	.0869	53.998	53118.2	58552.4	252.988	87.45	97.52	447
680.000	.926	1.08005	.0837	55.965	54904.4	60520.6	255.926	89.37	99.30	454
700.000	.897	1.11483	.0808	57.909	56727.0	62524.1	258.830	91.24	101.05	461

Table 24. Continued.

ETHANE ISOBAR AT P = 55 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
91.234	21.712	.04606	31.0057	866.049	5339.6	5593.0	77.227	46.40	67.88	2052
100.000	21.398	.04673	28.6364	799.598	5932.7	6189.7	83.472	45.83	68.23	1989
110.000	21.040	.04753	26.0998	727.039	6611.8	6873.2	89.987	45.19	68.47	1914
120.000	20.680	.04836	23.7718	659.194	7293.1	7559.0	95.954	44.63	68.68	1836
130.000	20.318	.04922	21.6535	596.376	7976.4	8247.1	101.461	44.17	68.93	1759
140.000	19.954	.05012	19.7317	538.432	8662.4	8938.0	106.581	43.84	69.27	1682
150.000	19.585	.05106	17.9883	485.013	9352.0	9632.8	111.374	43.62	69.71	1605
160.000	19.211	.05205	16.4034	435.699	10046.3	10332.6	115.891	43.51	70.28	1529
170.000	18.832	.05310	14.9584	390.087	10746.7	11038.8	120.172	43.49	70.99	1455
180.000	18.444	.05422	13.6359	347.791	11454.7	11752.9	124.253	43.56	71.85	1381
190.000	18.047	.05541	12.4200	308.472	12171.7	12476.4	128.165	43.71	72.88	1307
200.000	17.638	.05670	11.2966	271.838	12899.4	13211.3	131.934	43.93	74.11	1234
210.000	17.215	.05808	10.2531	237.645	13639.9	13959.4	135.583	44.20	75.55	1162
220.000	16.774	.05962	9.2782	205.692	14395.2	14723.1	139.136	44.54	77.27	1089
230.000	16.311	.06131	8.3614	175.814	15168.5	15505.7	142.615	44.94	79.32	1015
240.000	15.820	.06321	7.4932	147.885	15963.3	16310.9	146.041	45.40	81.81	941
250.000	15.294	.06538	6.6644	121.804	16784.4	17144.0	149.441	45.94	84.91	865
260.000	14.721	.06793	5.8654	97.494	17640.7	18014.3	152.854	47.20	89.54	784
270.000	14.084	.07100	5.0858	74.896	18544.4	18934.9	156.328	47.90	94.91	702
280.000	13.349	.07491	4.3117	53.965	19509.0	19921.0	159.914	48.78	102.91	615
290.000	12.455	.08029	3.5202	34.657	20570.3	21011.9	163.740	49.91	116.75	519
300.000	11.216	.08916	2.6556	16.913	21827.0	22317.4	168.163	51.52	150.95	405
310.000	8.000	.12500	1.3419	1.461	24175.8	24863.3	176.479	56.42	653.48	237
320.000	4.006	.24963	.5400	5.017	27254.9	28628.0	188.694	56.00	171.91	226
330.000	3.302	.30284	.4156	8.622	28330.6	29996.2	192.909	54.64	115.28	245
340.000	2.921	.34238	.3513	11.482	29164.0	31047.0	196.047	54.56	97.41	261
350.000	2.661	.37581	.3093	13.931	29907.2	31974.1	198.735	54.96	88.91	273
360.000	2.465	.40563	.2789	16.111	30606.6	32837.6	201.167	55.62	84.21	284
370.000	2.309	.43305	.2553	18.098	31282.8	33664.6	203.433	56.43	81.43	294
380.000	2.180	.45872	.2364	19.940	31946.9	34469.8	205.581	57.36	79.77	303
390.000	2.070	.48306	.2208	21.668	32605.5	35262.3	207.639	58.35	78.82	312
400.000	1.975	.50635	.2076	23.302	33262.9	36047.9	209.628	59.39	78.36	319
410.000	1.891	.52880	.1962	24.860	33922.1	36830.5	211.561	60.47	78.23	327
420.000	1.816	.55054	.1863	26.353	34585.2	37613.2	213.447	61.58	78.34	333
430.000	1.749	.57168	.1776	27.791	35253.7	38397.9	215.293	62.70	78.64	340
440.000	1.688	.59232	.1698	29.181	35928.7	39186.4	217.106	63.84	79.08	346
450.000	1.633	.61253	.1628	30.529	36611.0	39979.9	218.889	64.98	79.63	352
460.000	1.581	.63235	.1564	31.840	37301.4	40779.3	220.646	66.12	80.26	358
470.000	1.534	.65183	.1507	33.119	38000.2	41585.3	222.380	67.27	80.96	364
480.000	1.490	.67102	.1454	34.368	38707.9	42398.5	224.092	68.41	81.71	369
490.000	1.449	.68994	.1406	35.592	39424.8	43219.5	225.784	69.55	82.49	374
500.000	1.411	.70862	.1361	36.792	40151.1	44048.5	227.459	70.68	83.32	379
520.000	1.342	.74536	.1281	39.129	41632.2	45731.7	230.760	72.92	85.03	389
540.000	1.280	.78139	.1211	41.395	43152.2	47449.9	234.002	75.13	86.80	398
560.000	1.224	.81683	.1149	43.600	44711.3	49203.8	237.191	77.29	88.60	407
580.000	1.174	.85175	.1094	45.755	46309.4	50994.1	240.332	79.41	90.42	416
600.000	1.128	.88625	.1045	47.865	47946.4	52820.7	243.428	81.49	92.25	424
620.000	1.087	.92037	.1001	49.937	49621.7	54683.8	246.483	83.53	94.06	432
640.000	1.048	.95417	.0960	51.975	51335.1	56583.0	249.497	85.52	95.86	440
660.000	1.012	.98768	.0924	53.983	53085.9	58518.2	252.475	87.48	97.65	447
680.000	.979	1.02094	.0890	55.966	54873.6	60488.8	255.416	89.39	99.41	454
700.000	.949	1.05397	.0859	57.925	56697.6	62494.5	258.323	91.26	101.15	462

Table 24. Continued.

ETHANE ISOBAR AT P = 60 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
91.314	21.715	.04605	31.0090	867.379	5341.7	5618.0	77.248	46.41	67.87	2054
100.000	21.404	.04672	28.6644	801.679	5928.9	6209.2	83.433	45.85	68.22	1991
110.000	21.047	.04751	26.1299	729.223	6607.5	6892.6	89.947	45.21	68.46	1916
120.000	20.688	.04834	23.8035	661.447	7288.1	7578.1	95.912	44.64	68.66	1839
130.000	20.327	.04920	21.6865	598.678	7970.8	8266.0	101.417	44.19	68.91	1761
140.000	19.963	.05009	19.7659	540.771	8656.1	8956.6	106.535	43.86	69.24	1684
150.000	19.595	.05103	18.0234	487.385	9344.9	9651.1	111.326	43.64	69.67	1608
160.000	19.223	.05202	16.4395	438.103	10038.3	10350.5	115.840	43.52	70.24	1533
170.000	18.844	.05307	14.9956	392.523	10737.8	11056.2	120.118	43.51	70.93	1458
180.000	18.458	.05418	13.6742	350.263	11444.6	11769.6	124.196	43.58	71.78	1385
190.000	18.063	.05536	12.4596	310.984	12160.3	12492.4	128.103	43.73	72.80	1312
200.000	17.656	.05664	11.3379	274.396	12886.5	13226.3	131.867	43.94	74.00	1239
210.000	17.236	.05802	10.2964	240.257	13625.0	13973.2	135.511	44.22	75.42	1167
220.000	16.798	.05953	9.3238	208.366	14378.2	14735.4	139.057	44.56	77.09	1094
230.000	16.339	.06120	8.4100	178.561	15148.7	15515.9	142.526	44.96	79.08	1022
240.000	15.854	.06308	7.5457	150.718	15939.9	16318.4	145.941	45.42	81.49	948
250.000	15.335	.06521	6.7219	124.740	16756.4	17147.7	149.326	45.95	84.46	873
260.000	14.772	.06770	5.9297	100.555	17606.4	18012.6	152.717	47.22	88.88	793
270.000	14.149	.07068	5.1597	78.115	18500.9	18925.0	156.160	47.91	93.87	713
280.000	13.439	.07441	4.4002	57.391	19450.8	19897.3	159.696	48.78	101.08	628
290.000	12.592	.07942	3.6338	38.378	20484.7	20961.2	163.428	49.87	112.80	537
300.000	11.480	.08711	2.8253	21.120	21670.9	22193.2	167.602	51.31	137.34	433
310.000	9.563	.10457	1.8528	6.094	23301.5	23928.9	173.285	53.88	244.84	303
320.000	5.294	.18889	.7678	3.087	26356.0	27489.3	184.794	58.19	276.22	220
330.000	3.954	.25294	.5223	6.829	27851.0	29368.6	190.587	55.76	140.11	238
340.000	3.369	.29511	.4239	9.944	28815.8	30586.5	194.224	55.29	108.79	255
350.000	3.039	.32911	.3653	12.588	29626.4	31601.1	197.166	55.50	95.69	268
360.000	2.788	.35871	.3249	14.921	30368.0	32520.2	199.756	56.05	88.81	280
370.000	2.594	.38550	.2947	17.033	31073.6	33386.7	202.130	56.78	84.82	290
380.000	2.437	.41034	.2709	18.979	31759.7	34221.7	204.357	57.65	82.40	300
390.000	2.306	.43371	.2516	20.796	32435.5	35037.7	206.477	58.60	80.94	309
400.000	2.193	.45595	.2355	22.509	33106.8	35842.5	208.514	59.61	80.11	317
410.000	2.095	.47728	.2218	24.135	33777.6	36641.2	210.487	60.67	79.71	324
420.000	2.009	.49786	.2099	25.689	34450.4	37437.6	212.406	61.75	79.61	331
430.000	1.931	.51783	.1996	27.182	35127.3	38234.2	214.280	62.86	79.75	338
440.000	1.861	.53726	.1904	28.622	35809.5	39033.1	216.117	63.98	80.06	345
450.000	1.798	.55623	.1822	30.015	36498.3	39835.8	217.921	65.11	80.50	351
460.000	1.740	.57484	.1748	31.368	37194.4	40643.4	219.696	66.24	81.04	357
470.000	1.686	.59308	.1681	32.686	37898.4	41456.9	221.445	67.38	81.66	362
480.000	1.637	.61102	.1620	33.971	38610.7	42276.9	223.171	68.51	82.35	368
490.000	1.591	.62869	.1564	35.228	39331.8	43104.0	224.877	69.64	83.08	373
500.000	1.548	.64611	.1512	36.458	40061.9	43938.6	226.563	70.77	83.86	379
520.000	1.470	.68033	.1420	38.852	41549.9	45631.9	229.883	73.00	85.49	388
540.000	1.401	.71383	.1340	41.168	43075.7	47358.6	233.142	75.19	87.20	398
560.000	1.339	.74673	.1270	43.418	44639.8	49120.1	236.345	77.35	88.96	407
580.000	1.283	.77912	.1208	45.612	46242.3	50917.0	239.497	79.47	90.74	416
600.000	1.233	.81108	.1153	47.759	47883.1	52749.6	242.603	81.54	92.53	424
620.000	1.187	.84266	.1103	49.863	49562.0	54618.0	245.667	83.57	94.31	432
640.000	1.144	.87392	.1058	51.932	51278.5	56522.0	248.689	85.56	96.09	440
660.000	1.105	.90489	.1016	53.968	53032.2	58461.5	251.673	87.51	97.86	447
680.000	1.069	.93561	.0978	55.976	54822.5	60436.1	254.620	89.42	99.60	455
700.000	1.035	.96610	.0944	57.958	56648.8	62445.4	257.532	91.29	101.33	462

Table 24. Continued.

ETHANE ISOBAR AT P = 65 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
91.394	21.718	.04604	31.0123	868.708	5343.7	5643.0	77.270	46.41	67.87	2055
100.000	21.411	.04671	28.6923	803.756	5925.1	6228.7	83.394	45.86	68.21	1993
110.000	21.053	.04750	26.1599	731.404	6603.1	6911.9	89.906	45.22	68.44	1918
120.000	20.695	.04832	23.8351	663.697	7283.2	7597.3	95.870	44.66	68.64	1841
130.000	20.335	.04918	21.7194	600.976	7965.2	8284.9	101.373	44.20	68.88	1764
140.000	19.972	.05007	19.7999	543.108	8649.8	8975.3	106.489	43.87	69.21	1687
150.000	19.605	.05101	18.0584	489.753	9337.8	9669.4	111.278	43.65	69.64	1611
160.000	19.234	.05199	16.4755	440.502	10030.4	10368.4	115.789	43.54	70.19	1536
170.000	18.857	.05303	15.0326	394.954	10728.9	11073.6	120.064	43.53	70.88	1462
180.000	18.472	.05413	13.7124	352.729	11434.5	11786.4	124.139	43.60	71.72	1389
190.000	18.079	.05531	12.4991	313.489	12148.9	12508.5	128.042	43.74	72.71	1316
200.000	17.674	.05658	11.3789	276.946	12873.6	13241.4	131.801	43.96	73.89	1244
210.000	17.256	.05795	10.3393	242.858	13610.4	13987.1	135.439	44.24	75.28	1172
220.000	16.822	.05945	9.3690	211.028	14361.4	14747.8	138.978	44.58	76.92	1100
230.000	16.367	.06110	8.4581	181.293	15129.2	15526.3	142.438	44.97	78.86	1028
240.000	15.887	.06295	7.5975	153.532	15917.0	16326.2	145.842	45.44	81.19	955
250.000	15.375	.06504	6.7784	127.650	16729.1	17151.9	149.212	45.97	84.04	880
260.000	14.821	.06747	5.9926	103.581	17573.1	18011.7	152.584	47.23	88.27	802
270.000	14.212	.07036	5.2314	81.283	18459.1	18916.5	155.998	47.92	92.93	724
280.000	13.524	.07394	4.4849	60.741	19395.8	19876.4	159.489	48.78	99.47	641
290.000	12.716	.07864	3.7394	41.970	20406.4	20917.6	163.141	49.83	109.59	554
300.000	11.697	.08549	2.9718	25.062	21540.2	22095.9	167.134	51.17	128.44	457
310.000	10.179	.09824	2.1239	10.449	22951.8	23590.4	172.030	53.14	182.31	345
320.000	7.004	.14278	1.1127	3.131	25312.1	26240.2	180.428	55.77	313.78	242
330.000	4.782	.20912	.6658	5.392	27273.1	28632.4	188.007	56.88	175.53	235
340.000	3.931	.25437	.5121	8.551	28425.5	30078.9	192.328	56.04	123.51	250
350.000	3.457	.28925	.4301	11.334	29322.7	31202.8	195.587	56.05	103.85	264
360.000	3.136	.31884	.3767	13.796	30115.2	32187.6	198.362	56.48	94.12	276
370.000	2.897	.34522	.3381	16.020	30854.9	33098.8	200.859	57.14	88.60	287
380.000	2.707	.36940	.3085	18.063	31565.8	33966.8	203.174	57.95	85.27	297
390.000	2.551	.39198	.2849	19.963	32260.5	34808.4	205.360	58.85	83.22	306
400.000	2.419	.41335	.2654	21.749	32947.0	35633.8	207.450	59.83	81.97	314
410.000	2.305	.43375	.2490	23.441	33630.1	36449.5	209.464	60.86	81.26	322
420.000	2.206	.45337	.2349	25.054	34313.4	37260.3	211.418	61.92	80.94	330
430.000	2.117	.47234	.2227	26.600	34999.1	38069.3	213.322	63.01	80.90	337
440.000	2.038	.49076	.2120	28.088	35689.0	38879.0	215.183	64.12	81.07	343
450.000	1.966	.50872	.2024	29.526	36384.5	39691.2	217.008	65.24	81.40	350
460.000	1.900	.52626	.1939	30.920	37086.6	40507.3	218.802	66.36	81.84	356
470.000	1.840	.54346	.1861	32.275	37795.8	41328.3	220.568	67.49	82.39	361
480.000	1.785	.56034	.1791	33.595	38513.0	42155.2	222.309	68.61	83.00	367
490.000	1.733	.57695	.1727	34.884	39238.4	42988.6	224.027	69.74	83.68	373
500.000	1.685	.59331	.1668	36.145	39972.4	43829.0	225.725	70.85	84.41	378
520.000	1.599	.62539	.1564	38.593	41467.3	45532.4	229.055	73.07	85.96	388
540.000	1.523	.65675	.1473	40.958	42999.0	47267.8	232.340	75.26	87.61	398
560.000	1.455	.68749	.1395	43.251	44568.2	49036.9	235.556	77.41	89.31	407
580.000	1.393	.71773	.1325	45.485	46175.2	50840.5	238.721	79.52	91.05	416
600.000	1.338	.74754	.1263	47.666	47820.0	52679.0	241.837	81.59	92.81	424
620.000	1.287	.77697	.1207	49.803	49502.4	54552.7	244.909	83.62	94.57	432
640.000	1.241	.80607	.1156	51.901	51222.0	56461.5	247.939	85.61	96.32	440
660.000	1.198	.83489	.1110	53.964	52978.6	58405.3	250.930	87.55	98.06	448
680.000	1.158	.86346	.1068	55.997	54771.4	60383.9	253.883	89.46	99.79	455
700.000	1.121	.89180	.1030	58.003	56600.2	62396.9	256.800	91.32	101.50	463

Table 24. Continued.

ETHANE ISOBAR AT P = 70 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
91.474	21.721	.04604	31.0157	870.037	5345.7	5667.9	77.291	46.42	67.86	2056
100.000	21.417	.04669	28.7201	805.830	5921.3	6248.1	83.355	45.88	68.19	1995
110.000	21.060	.04748	26.1899	733.582	6598.8	6931.2	89.866	45.24	68.43	1920
120.000	20.703	.04830	23.8667	665.943	7278.3	7616.4	95.828	44.67	68.62	1844
130.000	20.343	.04916	21.7522	603.272	7959.7	8303.8	101.329	44.22	68.86	1767
140.000	19.981	.05006	19.8338	545.441	8643.6	8993.9	106.443	43.89	69.18	1690
150.000	19.616	.05098	18.0933	492.118	9330.8	9687.7	111.230	43.67	69.60	1615
160.000	19.246	.05195	16.5114	442.898	10022.6	10386.3	115.739	43.56	70.15	1540
170.000	18.870	.05300	15.0695	397.381	10720.0	11091.0	120.011	43.54	70.83	1466
180.000	18.487	.05409	13.7504	355.189	11424.6	11803.3	124.082	43.61	71.65	1393
190.000	18.095	.05526	12.5384	315.987	12137.7	12524.6	127.981	43.76	72.63	1320
200.000	17.692	.05652	11.4197	279.483	12860.9	13256.6	131.736	43.98	73.79	1248
210.000	17.277	.05788	10.3819	245.450	13595.9	14001.1	135.368	44.26	75.15	1177
220.000	16.845	.05936	9.4139	213.677	14344.8	14760.3	138.900	44.59	76.75	1105
230.000	16.394	.06100	8.5058	184.010	15109.9	15536.9	142.352	44.99	78.64	1034
240.000	15.919	.06282	7.6486	156.326	15894.5	16334.3	145.745	45.45	80.89	961
250.000	15.413	.06488	6.8340	130.535	16702.4	17156.6	149.101	45.99	83.64	888
260.000	14.869	.06726	6.0542	106.574	17540.7	18011.5	152.454	47.25	87.70	811
270.000	14.272	.07007	5.3011	84.406	18418.8	18909.3	155.842	47.93	92.06	734
280.000	13.604	.07351	4.5661	64.023	19343.6	19858.1	159.292	48.78	98.05	654
290.000	12.831	.07794	3.8386	45.456	20334.1	20879.6	162.875	49.81	106.31	569
300.000	11.883	.08416	3.1024	28.811	21427.5	22016.5	166.728	51.07	122.05	478
310.000	10.584	.09449	2.3263	14.467	22718.7	23380.1	171.196	52.76	156.29	377
320.000	8.329	.12006	1.4547	4.825	24544.0	25384.4	177.550	55.17	257.44	273
330.000	5.783	.17293	.8528	4.799	26619.1	27829.6	185.286	57.71	207.23	239
340.000	4.560	.21930	.6196	7.445	27991.0	29526.1	190.355	56.75	141.07	248
350.000	3.922	.25496	.5053	10.229	28994.9	30779.6	193.990	56.59	113.39	261
360.000	3.513	.28464	.4350	12.769	29847.7	31840.1	196.979	56.90	100.13	273
370.000	3.219	.31070	.3861	15.080	30626.5	32801.4	199.613	57.48	92.79	284
380.000	2.991	.33436	.3495	17.204	31365.1	33705.6	202.024	58.24	88.39	294
390.000	2.807	.35623	.3207	19.179	32080.7	34574.7	204.282	59.10	85.65	304
400.000	2.653	.37692	.2973	21.033	32783.5	35422.0	206.427	60.05	83.94	312
410.000	2.522	.39654	.2779	22.785	33479.9	36255.7	208.486	61.05	82.90	320
420.000	2.409	.41533	.2613	24.453	34174.2	37081.5	210.476	62.10	82.33	328
430.000	2.307	.43345	.2471	26.049	34869.2	37903.4	212.410	63.17	82.10	335
440.000	2.217	.45100	.2346	27.583	35567.2	38724.2	214.297	64.26	82.11	342
450.000	2.136	.46807	.2236	29.063	36269.7	39546.2	216.144	65.36	82.32	348
460.000	2.063	.48473	.2137	30.496	36977.9	40371.0	217.957	66.48	82.66	355
470.000	1.996	.50102	.2049	31.887	37692.7	41199.8	219.739	67.59	83.12	361
480.000	1.934	.51700	.1969	33.241	38414.7	42033.7	221.495	68.71	83.67	366
490.000	1.877	.53269	.1896	34.561	39144.6	42873.4	223.226	69.83	84.29	372
500.000	1.824	.54814	.1829	35.851	39882.6	43719.6	224.936	70.94	84.96	377
520.000	1.729	.57868	.1711	38.353	41384.6	45433.2	228.296	73.15	86.43	388
540.000	1.645	.60789	.1610	40.765	42922.3	47177.5	231.588	75.33	88.01	397
560.000	1.570	.63679	.1522	43.100	44496.6	48954.2	234.818	77.47	89.67	407
580.000	1.503	.66518	.1444	45.372	46108.2	50764.5	237.994	79.57	91.37	416
600.000	1.443	.69314	.1375	47.588	47756.9	52608.9	241.121	81.64	93.09	424
620.000	1.387	.72072	.1313	49.757	49442.9	54487.9	244.201	83.66	94.82	433
640.000	1.337	.74798	.1257	51.883	51165.7	56401.5	247.239	85.65	96.55	441
660.000	1.290	.77495	.1208	53.973	52925.1	58349.7	250.236	87.59	98.27	448
680.000	1.247	.80167	.1160	56.030	54720.5	60332.2	253.195	89.49	99.98	456
700.000	1.207	.82816	.1117	58.058	56551.6	62348.8	256.118	91.36	101.68	463

Table 24. Continued.

ETHANE ISOBAR AT P = 75 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
91.553	21.724	.04603	31.0191	871.366	5347.7	5692.9	77.312	46.43	67.85	2057
100.000	21.423	.04668	28.7479	807.901	5917.5	6267.6	83.316	45.89	68.18	1997
110.000	21.067	.04747	26.2198	735.757	6594.5	6950.5	89.826	45.25	68.41	1923
120.000	20.710	.04829	23.8982	668.187	7273.4	7635.5	95.786	44.69	68.60	1846
130.000	20.351	.04914	21.7850	605.564	7954.2	8322.7	101.286	44.24	68.83	1770
140.000	19.990	.05002	19.8676	547.770	8637.4	9012.6	106.398	43.90	69.15	1693
150.000	19.626	.05095	18.1281	494.480	9323.9	9706.0	111.182	43.68	69.57	1618
160.000	19.257	.05193	16.5472	445.289	10014.7	10404.2	115.688	43.57	70.10	1543
170.000	18.882	.05296	15.1063	399.803	10711.3	11108.5	119.958	43.56	70.77	1469
180.000	18.501	.05405	13.7882	357.644	11414.7	11820.1	124.025	43.63	71.59	1396
190.000	18.111	.05522	12.5775	318.479	12126.6	12540.7	127.921	43.78	72.55	1324
200.000	17.710	.05647	11.4603	282.022	12848.3	13271.8	131.671	43.99	73.69	1253
210.000	17.297	.05781	10.4242	248.033	13581.6	14015.2	135.297	44.27	75.02	1182
220.000	16.869	.05928	9.4584	216.316	14328.4	14773.0	138.823	44.61	76.59	1111
230.000	16.421	.06090	8.5529	186.712	15091.0	15547.7	142.266	45.01	78.43	1040
240.000	15.951	.06269	7.6991	159.103	15872.5	16342.7	145.649	45.47	80.61	968
250.000	15.451	.06472	6.8838	133.397	16676.3	17161.7	148.992	46.00	83.26	896
260.000	14.915	.06705	6.1145	109.536	17509.2	18012.1	152.327	47.26	87.16	819
270.000	14.330	.06978	5.3689	87.486	18379.9	18903.3	155.690	47.94	91.26	744
280.000	13.680	.07310	4.6444	67.245	19293.7	19842.0	159.103	48.78	96.77	666
290.000	12.937	.07730	3.9324	48.850	20266.7	20846.4	162.627	49.79	104.64	584
300.000	12.046	.08301	3.2214	32.412	21327.4	21950.0	166.367	51.00	117.20	497
310.000	10.898	.09183	2.4936	18.254	22539.3	23228.0	170.555	52.53	141.56	404
320.000	9.147	.10932	1.7229	7.740	24078.8	24898.7	175.855	54.55	201.21	308
330.000	6.791	.14724	1.0651	5.256	25999.0	27103.3	182.844	57.99	212.41	253
340.000	5.266	.18990	.7479	6.829	27524.3	28948.6	188.356	57.33	157.74	249
350.000	4.434	.22552	.5921	9.361	28644.9	30336.3	192.381	57.09	123.77	259
360.000	3.920	.25513	.5006	11.885	29566.1	31479.6	195.603	57.31	106.71	271
370.000	3.560	.28090	.4390	14.238	30388.7	32495.5	198.387	57.82	97.33	282
380.000	3.288	.30410	.3940	16.421	31157.8	33438.6	200.902	58.52	91.74	292
390.000	3.073	.32547	.3592	18.455	31896.1	34337.1	203.236	59.35	88.24	302
400.000	2.895	.34546	.3314	20.366	32616.5	35207.5	205.440	60.26	86.01	310
410.000	2.744	.36439	.3085	22.173	33327.0	36060.0	207.545	61.24	84.61	319
420.000	2.615	.38247	.2892	23.891	34032.9	36901.4	209.573	62.26	83.77	326
430.000	2.501	.39985	.2726	25.533	34737.8	37736.6	211.538	63.32	83.33	334
440.000	2.400	.41664	.2582	27.110	35444.1	38568.9	213.452	64.40	83.18	341
450.000	2.310	.43294	.2456	28.630	36153.9	39401.0	215.321	65.49	83.26	347
460.000	2.228	.44882	.2344	30.099	36868.5	40234.6	217.154	66.59	83.50	354
470.000	2.154	.46433	.2243	31.525	37588.9	41071.4	218.953	67.70	83.87	360
480.000	2.085	.47952	.2153	32.910	38316.0	41912.4	220.724	68.81	84.35	366
490.000	2.023	.49442	.2070	34.260	39050.4	42758.5	222.468	69.92	84.90	371
500.000	1.964	.50907	.1995	35.579	39792.6	43610.6	224.190	71.02	85.52	377
520.000	1.860	.53772	.1863	38.132	41301.7	45334.6	227.570	73.22	86.91	387
540.000	1.768	.56562	.1750	40.589	42845.5	47087.7	230.878	75.39	88.42	397
560.000	1.687	.59292	.1652	42.966	44425.1	48872.0	234.123	77.53	90.03	407
580.000	1.614	.61971	.1565	45.274	46041.2	50689.0	237.311	79.63	91.68	416
600.000	1.548	.64606	.1489	47.524	47693.9	52539.4	240.447	81.69	93.37	425
620.000	1.488	.67203	.1421	49.723	49383.4	54423.7	243.536	83.71	95.07	433
640.000	1.433	.69765	.1359	51.878	51109.4	56342.1	246.582	85.69	96.78	441
660.000	1.383	.72295	.1303	53.993	52871.7	58294.6	249.586	87.63	98.48	449
680.000	1.337	.74796	.1252	56.074	54669.8	60281.0	252.551	89.53	100.17	456
700.000	1.294	.77268	.1206	58.124	56503.3	62301.2	255.478	91.39	101.85	464

Table 24. Continued.

ETHANE ISOBAR AT P = 80 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
91.633	21.727	.04603	31.0226	872.694	5349.7	5717.9	77.334	46.44	67.85	2059
100.000	21.429	.04667	28.7756	809.968	5913.7	6287.0	83.277	45.90	68.17	1999
110.000	21.074	.04745	26.2497	737.929	6590.2	6969.8	89.786	45.26	68.39	1925
120.000	20.718	.04827	23.9297	670.428	7268.5	7654.7	95.745	44.70	68.58	1849
130.000	20.360	.04912	21.8177	607.854	7948.7	8341.6	101.243	44.25	68.81	1772
140.000	19.999	.05000	19.9014	550.097	8631.2	9031.2	106.353	43.92	69.12	1696
150.000	19.636	.05093	18.1629	496.838	9316.9	9724.4	111.135	43.70	69.53	1621
160.000	19.268	.05190	16.5829	447.677	10007.0	10422.2	115.638	43.59	70.06	1546
170.000	18.895	.05293	15.1429	402.220	10702.5	11125.9	119.905	43.57	70.72	1473
180.000	18.515	.05401	13.8259	360.094	11404.9	11837.0	123.969	43.65	71.52	1400
190.000	18.126	.05517	12.6164	320.965	12115.6	12556.9	127.861	43.79	72.47	1329
200.000	17.728	.05641	11.5006	284.549	12835.8	13287.1	131.606	44.01	73.59	1257
210.000	17.317	.05775	10.4663	250.607	13567.4	14029.4	135.227	44.29	74.90	1187
220.000	16.891	.05920	9.5025	218.943	14312.2	14785.8	138.746	44.63	76.43	1116
230.000	16.448	.06080	8.5996	189.402	15072.4	15558.7	142.182	45.03	78.22	1046
240.000	15.982	.06257	7.7490	161.862	15850.7	16351.3	145.555	45.49	80.34	975
250.000	15.488	.06457	6.9427	136.237	16650.7	17167.2	148.885	46.02	82.89	903
260.000	14.960	.06685	6.1737	112.469	17478.6	18013.3	152.203	47.28	86.65	827
270.000	14.386	.06951	5.4350	90.528	18342.2	18898.3	155.543	47.95	90.52	753
280.000	13.753	.07271	4.7200	70.413	19246.1	19827.8	158.922	48.79	95.62	677
290.000	13.036	.07671	4.0215	52.165	20203.5	20817.2	162.394	49.78	102.68	598
300.000	12.193	.08202	3.3313	35.891	21237.1	21893.3	166.040	50.95	113.35	515
310.000	11.140	.08977	2.6388	21.868	22391.6	23109.7	170.027	52.37	131.91	428
320.000	9.687	.10323	1.9328	10.987	23770.3	24596.1	174.743	54.13	170.07	338
330.000	7.668	.13041	1.2794	6.277	25481.8	26525.0	180.882	57.86	204.19	271
340.000	6.002	.16660	.8926	6.862	27058.3	28391.1	186.455	57.69	167.28	257
350.000	4.986	.20056	.6908	8.830	28279.8	29884.3	190.786	57.52	133.59	261
360.000	4.354	.22970	.5737	11.197	29272.6	31110.2	194.240	57.68	113.51	270
370.000	3.920	.25507	.4970	13.528	30142.5	32183.1	197.181	58.14	102.10	281
380.000	3.600	.27781	.4422	15.733	30944.6	33167.1	199.805	58.80	95.25	291
390.000	3.348	.29865	.4006	17.806	31707.2	34096.4	202.219	59.59	90.94	300
400.000	3.144	.31807	.3677	19.761	32446.3	34990.8	204.484	60.47	88.16	309
410.000	2.973	.33639	.3409	21.612	33171.7	35862.8	206.637	61.43	86.37	317
420.000	2.826	.35383	.3185	23.373	33889.8	36720.4	208.704	62.43	85.25	325
430.000	2.699	.37055	.2994	25.056	34604.9	37569.3	210.701	63.47	84.59	333
440.000	2.586	.38668	.2830	26.672	35319.9	38413.4	212.642	64.53	84.28	340
450.000	2.486	.40230	.2686	28.228	36037.2	39255.6	214.535	65.61	84.22	347
460.000	2.395	.41750	.2558	29.731	36758.3	40098.3	216.387	66.70	84.35	353
470.000	2.313	.43232	.2445	31.189	37484.6	40943.1	218.204	67.80	84.63	359
480.000	2.238	.44681	.2343	32.605	38216.8	41791.3	219.989	68.90	85.03	365
490.000	2.169	.46102	.2250	33.983	38955.9	42644.0	221.748	70.01	85.52	371
500.000	2.105	.47497	.2166	35.328	39702.3	43502.0	223.481	71.11	86.09	377
520.000	1.991	.50221	.2019	37.930	41218.7	45236.4	226.882	73.29	87.39	387
540.000	1.891	.52871	.1893	40.431	42768.7	46998.4	230.207	75.46	88.83	397
560.000	1.803	.55463	.1784	42.848	44353.6	48790.4	233.465	77.58	90.38	407
580.000	1.724	.57998	.1689	45.192	45974.2	50614.0	236.665	79.68	92.00	416
600.000	1.653	.60492	.1605	47.474	47631.0	52470.4	239.811	81.73	93.65	425
620.000	1.589	.62948	.1530	49.703	49324.1	54360.0	242.909	83.75	95.32	433
640.000	1.530	.65373	.1463	51.885	51053.3	56283.1	245.962	85.72	97.00	441
660.000	1.476	.67769	.1402	54.025	52818.5	58239.9	248.973	87.66	98.68	449
680.000	1.426	.70139	.1346	56.129	54619.2	60230.3	251.943	89.56	100.36	457
700.000	1.380	.72488	.1295	58.201	56455.0	62254.1	254.877	91.42	102.02	464

Table 24. Continued.

ETHANE ISOBAR AT P = 85 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
91.713	21.729	.04602	31.0261	874.022	5351.7	5742.9	77.355	46.45	67.84	2060
100.000	21.435	.04665	28.8033	812.031	5910.0	6306.5	83.239	45.92	68.15	2002
110.000	21.081	.04744	26.2795	740.097	6585.9	6989.1	89.746	45.28	68.38	1927
120.000	20.725	.04825	23.9610	672.666	7263.7	7673.8	95.703	44.72	68.56	1851
130.000	20.368	.04911	21.8503	610.140	7943.2	8360.6	101.199	44.27	68.79	1775
140.000	20.009	.04998	19.9351	552.420	8625.1	9049.9	106.308	43.93	69.09	1699
150.000	19.646	.05090	18.1975	499.192	9310.1	9742.7	111.087	43.71	69.50	1624
160.000	19.279	.05187	16.6184	450.060	9999.3	10440.2	115.589	43.60	70.02	1550
170.000	18.907	.05289	15.1794	404.633	10693.9	11143.5	119.852	43.59	70.67	1477
180.000	18.528	.05397	13.8635	362.538	11395.2	11854.0	123.913	43.66	71.46	1404
190.000	18.142	.05512	12.6552	323.445	12104.6	12573.2	127.801	43.81	72.39	1333
200.000	17.745	.05635	11.5407	287.069	12823.5	13302.5	131.542	44.03	73.50	1262
210.000	17.337	.05768	10.5080	253.172	13553.4	14043.7	135.158	44.31	74.78	1192
220.000	16.914	.05912	9.5463	221.559	14296.2	14798.7	138.670	44.65	76.28	1121
230.000	16.474	.06070	8.6459	192.077	15054.0	15569.9	142.099	45.04	78.03	1051
240.000	16.012	.06245	7.7983	164.604	15829.4	16360.2	145.462	45.50	80.09	981
250.000	15.525	.06441	6.9959	139.056	16625.6	17173.1	148.779	46.04	82.55	910
260.000	15.004	.06665	6.2318	115.375	17448.6	18015.2	152.082	47.29	86.17	836
270.000	14.441	.06925	5.4996	93.532	18305.8	18894.4	155.400	47.96	89.83	763
280.000	13.822	.07235	4.7931	73.530	19200.4	19815.4	158.748	48.79	94.58	688
290.000	13.129	.07617	4.1066	55.409	20144.0	20791.4	162.173	49.77	100.97	611
300.000	12.326	.08113	3.4339	39.270	21154.5	21844.2	165.741	50.90	110.20	531
310.000	11.352	.08809	2.7688	25.346	22264.9	23013.6	169.574	52.25	125.00	449
320.000	10.085	.09915	2.1070	14.271	23540.8	24383.6	173.921	53.85	151.72	365
330.000	8.379	.11935	1.4816	7.982	25071.1	26085.6	179.352	57.53	186.86	293
340.000	6.705	.14915	1.0448	7.448	26629.5	27897.3	184.771	57.82	168.68	268
350.000	5.558	.17991	.7996	8.720	27913.4	29442.6	189.253	57.83	140.88	265
360.000	4.810	.20790	.6543	10.762	28971.8	30739.0	192.906	58.01	119.90	271
370.000	4.298	.23266	.5603	12.982	29889.9	31867.4	195.999	58.43	106.87	281
380.000	3.924	.25487	.4943	15.163	30726.4	32892.8	198.733	59.05	98.33	290
390.000	3.634	.27519	.4449	17.247	31514.5	33853.6	201.229	59.81	93.71	299
400.000	3.401	.29407	.4063	19.227	32273.2	34772.8	203.557	60.67	90.37	308
410.000	3.207	.31183	.3751	21.110	33014.2	35664.7	205.759	61.60	88.18	317
420.000	3.042	.32869	.3493	22.905	33745.0	36538.9	207.866	62.59	86.76	324
430.000	2.900	.34483	.3275	24.623	34470.7	37401.7	209.896	63.61	85.88	332
440.000	2.775	.36036	.3087	26.272	35194.7	38257.7	211.864	64.66	85.39	339
450.000	2.664	.37538	.2924	27.860	35919.7	39110.4	213.780	65.73	85.19	346
460.000	2.564	.38996	.2781	29.395	36647.6	39962.3	215.653	66.81	85.21	353
470.000	2.474	.40417	.2653	30.882	37379.8	40815.2	217.487	67.90	85.40	359
480.000	2.392	.41804	.2539	32.326	38117.3	41670.7	219.288	69.00	85.72	365
490.000	2.317	.43163	.2436	33.731	38861.1	42530.0	221.060	70.09	86.15	371
500.000	2.247	.44496	.2342	35.101	39611.8	43393.9	222.805	71.19	86.66	376
520.000	2.123	.47096	.2179	37.749	41135.6	45138.8	226.227	73.37	87.87	387
540.000	2.015	.49621	.2040	40.292	42691.8	46909.6	229.568	75.52	89.25	397
560.000	1.920	.52085	.1920	42.746	44282.1	48709.3	232.841	77.64	90.74	407
580.000	1.835	.54498	.1816	45.125	45907.4	50539.7	236.052	79.73	92.31	416
600.000	1.758	.56867	.1723	47.439	47568.3	52402.0	239.209	81.78	93.93	425
620.000	1.689	.59199	.1641	49.696	49264.9	54296.9	242.315	83.79	95.57	434
640.000	1.626	.61499	.1568	51.904	50997.4	56224.8	245.375	85.76	97.23	442
660.000	1.568	.63770	.1501	54.069	52765.4	58185.9	248.393	87.70	98.89	450
680.000	1.515	.66017	.1441	56.195	54568.7	60180.2	251.369	89.59	100.55	457
700.000	1.465	.68242	.1386	58.288	56407.0	62207.5	254.308	91.45	102.19	465

Table 24. Continued.

ETHANE ISOBAR AT P = 90 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
91.792	21.732	.04601	31.0297	875.349	5353.7	5767.8	77.376	46.46	67.83	2061
100.000	21.442	.04664	28.8310	814.091	5906.2	6326.0	83.200	45.93	68.14	2004
110.000	21.087	.04742	26.3092	742.263	6581.7	7008.5	89.706	45.29	68.36	1930
120.000	20.732	.04823	23.9924	674.900	7258.9	7693.0	95.662	44.73	68.54	1854
130.000	20.376	.04908	21.8829	612.424	7937.8	8379.5	101.156	44.28	68.76	1778
140.000	20.018	.04996	19.9687	554.741	8619.0	9068.6	106.263	43.95	69.06	1702
150.000	19.656	.05088	18.2320	501.543	9303.2	9761.1	111.040	43.73	69.46	1627
160.000	19.290	.05184	16.6538	452.440	9991.6	10458.2	115.539	43.62	69.98	1553
170.000	18.919	.05286	15.2158	407.042	10685.3	11161.0	119.800	43.61	70.62	1480
180.000	18.542	.05393	13.9009	364.978	11385.6	11871.0	123.858	43.68	71.40	1408
190.000	18.157	.05507	12.6937	325.918	12093.8	12589.4	127.742	43.83	72.32	1337
200.000	17.763	.05630	11.5806	289.581	12811.3	13317.9	131.478	44.04	73.40	1266
210.000	17.357	.05762	10.5495	255.727	13539.5	14058.1	135.089	44.32	74.66	1196
220.000	16.937	.05904	9.5897	224.165	14280.4	14811.8	138.596	44.66	76.13	1127
230.000	16.500	.06061	8.6917	194.739	15035.8	15581.3	142.016	45.06	77.83	1057
240.000	16.043	.06233	7.8470	167.330	15808.4	16369.4	145.370	45.52	79.84	987
250.000	15.560	.06427	7.0483	141.854	16601.0	17179.4	148.676	46.05	82.21	917
260.000	15.047	.06646	6.2889	118.254	17419.4	18017.6	151.963	47.31	85.72	844
270.000	14.493	.06900	5.5626	96.503	18270.5	18891.4	155.261	47.97	89.19	772
280.000	13.889	.07200	4.8641	76.602	19159.6	19804.6	158.581	48.80	93.63	699
290.000	13.216	.07566	4.1882	58.592	20087.6	20768.6	161.963	49.76	99.46	624
300.000	12.448	.08033	3.5305	42.563	21078.3	21801.3	165.463	50.87	107.57	547
310.000	11.537	.08666	2.8872	28.714	22153.3	22933.4	169.174	52.16	119.77	468
320.000	10.401	.09613	2.2579	17.516	23357.2	24222.5	173.265	53.65	139.75	389
330.000	8.933	.11195	1.6627	10.232	24752.7	25760.3	178.201	57.30	169.06	316
340.000	7.341	.13621	1.1982	8.318	26251.[	27476.9	183.325	57.80	166.68	282
350.000	6.124	.16330	.9151	9.038	27561.7	29031.4	187.833	58.01	144.49	273
360.000	5.279	.18944	.7416	10.626	28670.6	30375.5	191.621	58.26	125.12	275
370.000	4.689	.21326	.6288	12.637	29633.7	31553.0	194.848	58.69	111.33	282
380.000	4.258	.23483	.5502	14.734	30504.6	32618.1	197.689	59.29	102.34	290
390.000	3.928	.25459	.4921	16.793	31318.8	33610.2	200.266	60.02	96.48	299
400.000	3.664	.27294	.4472	18.776	32097.8	34554.3	202.656	60.86	92.60	308
410.000	3.446	.29017	.4113	20.676	32854.9	35466.4	204.909	61.77	90.01	316
420.000	3.263	.30650	.3817	22.494	33598.8	36357.3	207.056	62.74	88.29	324
430.000	3.105	.32209	.3568	24.238	34335.4	37234.2	209.119	63.75	87.18	332
440.000	2.967	.33708	.3356	25.915	35068.6	38102.3	211.115	64.78	86.52	339
450.000	2.845	.35155	.3172	27.531	35801.6	38965.5	213.055	65.84	86.17	346
460.000	2.735	.36558	.3011	29.093	36536.4	39826.6	214.947	66.92	86.08	352
470.000	2.637	.37924	.2869	30.606	37274.6	40687.7	216.799	68.00	86.18	359
480.000	2.547	.39256	.2741	32.075	38017.5	41550.6	218.616	69.09	86.42	365
490.000	2.466	.40559	.2627	33.505	38766.1	42416.4	220.401	70.18	86.78	371
500.000	2.390	.41836	.2523	34.898	39521.1	43286.4	222.159	71.27	87.23	376
520.000	2.256	.44325	.2342	37.590	41052.5	45041.8	225.601	73.43	88.35	387
540.000	2.140	.46739	.2190	40.172	42615.0	46821.5	228.959	75.58	89.66	398
560.000	2.037	.49091	.2058	42.663	44210.7	48628.9	232.246	77.70	91.10	407
580.000	1.946	.51393	.1944	45.074	45840.6	50466.0	235.469	79.78	92.62	417
600.000	1.864	.53651	.1844	47.418	47505.6	52334.2	238.635	81.82	94.20	426
620.000	1.790	.55872	.1755	49.703	49205.9	54234.3	241.751	83.83	95.82	434
640.000	1.722	.58060	.1675	51.936	50941.5	56166.9	244.818	85.80	97.45	442
660.000	1.661	.60221	.1603	54.125	52712.4	58132.3	247.842	87.73	99.09	450
680.000	1.604	.62357	.1537	56.273	54518.4	60130.5	250.825	89.62	100.73	458
700.000	1.551	.64471	.1478	58.386	56359.0	62161.4	253.768	91.48	102.36	466

Table 24. Continued.

ETHANE ISOBAR AT P = 100 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
91.951	21.738	.04600	31.0369	878.003	5357.7	5817.7	77.419	46.47	67.82	2064
100.000	21.454	.04661	28.8962	818.201	5898.8	6364.9	83.123	45.96	68.12	2008
110.000	21.101	.04739	26.3687	746.591	6573.2	7047.1	89.626	45.32	68.33	1934
120.000	20.747	.04820	24.0548	679.361	7249.3	7731.3	95.579	44.76	68.51	1859
130.000	20.392	.04904	21.9478	616.981	7927.0	8417.4	101.070	44.31	68.72	1783
140.000	20.036	.04991	20.0356	559.372	8606.9	9106.0	106.173	43.98	69.01	1708
150.000	19.676	.05082	18.3006	506.235	9289.6	9797.9	110.947	43.76	69.39	1633
160.000	19.312	.05178	16.7244	457.188	9976.4	10494.2	115.441	43.65	69.90	1560
170.000	18.944	.05279	15.2881	411.846	10668.3	11196.1	119.696	43.64	70.52	1487
180.000	18.569	.05385	13.9752	369.841	11366.5	11905.0	123.748	43.71	71.28	1416
190.000	18.188	.05498	12.7702	330.847	12072.3	12622.2	127.625	43.86	72.17	1345
200.000	17.797	.05619	11.6598	294.584	12787.1	13349.0	131.353	44.08	73.22	1275
210.000	17.395	.05749	10.6317	260.814	13512.2	14087.1	134.954	44.36	74.43	1206
220.000	16.981	.05889	9.6756	229.345	14249.3	14838.2	138.448	44.70	75.84	1137
230.000	16.551	.06042	8.7821	200.025	15000.3	15604.5	141.854	45.09	77.47	1069
240.000	16.101	.06211	7.9436	172.735	15767.4	16388.5	145.190	45.55	79.37	1000
250.000	15.629	.06398	7.1511	147.392	16553.3	17193.1	148.474	46.09	81.59	931
260.000	15.129	.06610	6.4002	123.939	17363.0	18024.0	151.733	47.34	84.88	859
270.000	14.594	.06852	5.6847	102.350	18202.8	18888.0	154.993	48.00	88.03	790
280.000	14.015	.07135	5.0001	82.624	19073.6	19787.1	158.263	48.81	91.94	719
290.000	13.379	.07475	4.3424	64.794	19982.9	20730.3	161.572	49.75	96.91	647
300.000	12.667	.07895	3.7091	48.935	20940.8	21730.2	164.961	50.82	103.39	575
310.000	11.851	.08438	3.0990	35.187	21962.3	22806.1	168.488	52.03	112.27	502
320.000	10.888	.09184	2.5144	23.829	23070.1	23988.5	172.241	53.38	124.99	430
330.000	9.725	.10283	1.9665	15.467	24295.5	25323.8	176.554	56.88	144.12	361
340.000	8.391	.11917	1.4939	11.127	25639.0	26830.7	181.052	57.54	154.38	315
350.000	7.155	.13976	1.1526	10.509	26940.2	28337.8	185.421	58.10	144.55	294
360.000	6.200	.16128	.9293	11.273	28097.4	29710.2	189.288	58.56	130.30	288
370.000	5.485	.18230	.7785	12.640	29126.9	30949.9	192.686	59.06	118.03	289
380.000	4.946	.20219	.6727	14.382	30059.1	32080.1	195.700	59.67	108.50	294
390.000	4.535	.22053	.5951	16.266	30923.7	33129.0	198.425	60.39	101.08	301
400.000	4.206	.23774	.5358	18.172	31743.0	34120.5	200.935	61.20	96.92	309
410.000	3.938	.25393	.4890	20.047	32532.8	35072.1	203.285	62.08	93.61	317
420.000	3.714	.26925	.4510	21.871	33303.6	35996.1	205.512	63.02	91.33	324
430.000	3.523	.28386	.4194	23.638	34062.5	36901.1	207.642	64.01	89.78	332
440.000	3.357	.29788	.3926	25.347	34814.7	37793.5	209.693	65.02	88.77	339
450.000	3.212	.31138	.3697	27.001	35563.9	38677.7	211.680	66.06	88.14	346
460.000	3.082	.32445	.3497	28.603	36312.8	39557.3	213.613	67.12	87.82	352
470.000	2.966	.33714	.3321	30.157	37063.5	40434.8	215.501	68.19	87.73	359
480.000	2.861	.34950	.3165	31.667	37817.4	41312.4	217.348	69.26	87.81	365
490.000	2.766	.36157	.3026	33.138	38575.8	42191.5	219.161	70.34	88.04	371
500.000	2.678	.37338	.2900	34.571	39339.7	43073.5	220.943	71.42	88.36	377
520.000	2.523	.39635	.2682	37.339	40886.3	44849.8	224.426	73.57	89.31	388
540.000	2.389	.41857	.2500	39.993	42461.6	46647.3	227.818	75.70	90.48	398
560.000	2.272	.44019	.2344	42.549	44068.1	48470.0	231.132	77.80	91.81	408
580.000	2.168	.46129	.2209	45.021	45707.5	50320.4	234.379	79.87	93.25	418
600.000	2.075	.48197	.2091	47.421	47380.7	52200.4	237.565	81.91	94.76	427
620.000	1.991	.50228	.1986	49.758	49088.2	54111.0	240.698	83.91	96.31	435
640.000	1.915	.52227	.1893	52.039	50830.3	56053.0	243.780	85.87	97.90	444
660.000	1.845	.54198	.1809	54.272	52607.0	58026.9	246.817	87.80	99.49	452
680.000	1.781	.56145	.1734	56.462	54418.2	60032.7	249.811	89.69	101.10	460
700.000	1.722	.58071	.1665	58.613	56263.6	62070.7	252.765	91.54	102.70	467

Table 24. Continued.

ETHANE ISOBAR AT P = 110 BAR

T	DEN	VOL	DP/DT	DP/DD	E	H	S	CV	CP	W
DEG K	MOL/L	L/MOL	BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
92.110	21.744	.04599	31.0443	880.655	5361.7	5867.6	77.461	46.49	67.81	2066
100.000	21.486	.04655	28.9412	822.296	5891.4	6403.9	83.047	45.99	66.39	2012
110.000	21.114	.04736	26.4278	750.699	6564.8	7085.8	89.547	45.35	66.30	1939
120.000	20.762	.04817	24.1170	683.810	7239.8	7769.6	95.497	44.79	66.47	1864
130.000	20.409	.04900	22.0124	621.527	7916.4	8455.3	100.985	44.34	66.67	1789
140.000	20.053	.04987	20.1022	563.990	8594.9	9143.4	106.084	44.01	66.95	1714
150.000	19.695	.05077	18.3692	510.913	9276.2	9834.7	110.854	43.79	67.33	1640
160.000	19.334	.05172	16.7945	461.921	9961.4	10530.3	115.343	43.68	67.82	1566
170.000	18.968	.05272	15.3600	416.632	10651.5	11231.4	119.593	43.67	70.42	1494
180.000	18.596	.05377	14.0489	374.684	11347.7	11939.2	123.639	43.74	71.16	1423
190.000	18.218	.05489	12.8461	335.753	12051.2	12655.1	127.509	43.89	72.03	1353
200.000	17.836	.05605	11.7361	299.559	12763.4	13380.3	131.228	44.11	73.04	1284
210.000	17.433	.05736	10.7129	265.867	13485.5	14116.5	134.820	44.39	74.22	1215
220.000	17.024	.05874	9.7603	234.486	14219.0	14865.2	138.303	44.73	75.57	1147
230.000	16.600	.06024	8.8709	205.264	14965.7	15628.4	141.696	45.13	77.13	1080
240.000	16.158	.06189	8.0369	178.084	15727.7	16408.5	145.015	45.59	78.93	1012
250.000	15.696	.06371	7.2512	152.858	16507.2	17208.0	148.278	46.12	81.02	945
260.000	15.208	.06575	6.5080	129.534	17309.1	18032.4	151.511	47.37	84.12	874
270.000	14.689	.06808	5.8020	108.083	18138.6	18887.5	154.738	48.02	87.00	806
280.000	14.132	.07075	5.1293	88.500	18996.0	19774.4	157.964	48.82	90.51	738
290.000	13.526	.07393	4.4867	70.811	19887.0	20700.3	161.212	49.75	94.81	669
300.000	12.859	.07777	3.8724	55.072	20818.8	21674.3	164.513	50.79	100.19	601
310.000	12.113	.08256	3.2864	41.381	21801.1	22709.2	167.906	51.95	107.10	532
320.000	11.262	.08880	2.7315	29.912	22846.6	23823.4	171.443	53.21	116.15	465
330.000	10.278	.09730	2.2154	20.988	23972.5	25042.7	175.400	56.61	129.66	399
340.000	9.162	.10914	1.7566	15.169	25192.3	26392.9	179.429	57.24	139.63	350
350.000	8.023	.12464	1.3877	12.782	26430.5	27801.6	183.513	57.98	139.89	320
360.000	7.037	.14211	1.1234	12.756	27594.2	29157.4	187.333	58.63	130.57	307
370.000	6.253	.15991	.9391	13.547	28654.1	30413.1	190.774	59.26	120.86	303
380.000	5.637	.17740	.8063	14.776	29627.6	31578.9	193.883	59.93	112.54	303
390.000	5.150	.19417	.7079	16.324	30533.4	32669.2	196.716	60.66	105.80	307
400.000	4.760	.21009	.6327	18.029	31389.4	33700.3	199.326	61.47	100.68	313
410.000	4.441	.22517	.5737	19.791	32210.3	34687.2	201.764	62.34	96.91	319
420.000	4.175	.23951	.5261	21.556	33007.4	35642.1	204.055	63.27	94.20	326
430.000	3.949	.25321	.4868	23.297	33788.6	36573.9	206.257	64.24	92.28	333
440.000	3.755	.26634	.4539	25.001	34559.9	37489.6	208.363	65.24	90.95	340
450.000	3.584	.27895	.4257	26.664	35325.6	38394.4	210.396	66.26	90.07	347
460.000	3.434	.29121	.4014	28.283	36088.8	39292.1	212.369	67.31	89.53	353
470.000	3.300	.30307	.3802	29.861	36852.1	40185.8	214.291	68.36	89.25	360
480.000	3.179	.31461	.3614	31.397	37617.1	41077.9	216.169	69.42	89.19	366
490.000	3.069	.32587	.3447	32.896	38385.5	41970.1	218.009	70.49	89.28	372
500.000	2.968	.33687	.3297	34.359	39158.3	42863.9	219.815	71.56	89.51	378
520.000	2.791	.35823	.3038	37.186	40720.4	44661.0	223.339	73.70	90.26	389
540.000	2.639	.37886	.2823	39.898	42308.6	46476.1	226.764	75.81	91.29	399
560.000	2.507	.39889	.2640	42.511	43926.1	48313.9	230.106	77.91	92.52	409
580.000	2.390	.41842	.2483	45.036	45574.9	50177.6	233.375	79.97	93.87	419
600.000	2.286	.43753	.2346	47.486	47256.3	52069.1	236.582	82.00	95.31	428
620.000	2.192	.45627	.2225	49.870	48971.1	53990.1	239.731	83.99	96.80	437
640.000	2.107	.47470	.2118	52.195	50719.7	55941.4	242.828	85.95	98.34	445
660.000	2.029	.49285	.2021	54.469	52502.3	57923.6	245.878	87.87	99.89	453
680.000	1.958	.51076	.1935	56.697	54318.7	59937.1	248.883	89.75	101.46	461
700.000	1.892	.52847	.1856	58.884	56168.8	61982.0	251.847	91.60	103.03	469

Table 24. Continued.

ETHANE ISOBAR AT P = 120 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
92.268	21.750	.04598	31.0520	883.305	5365.7	5917.4	77.503	46.50	67.30	2069
100.000	21.478	.04656	28.9960	826.377	5884.1	6442.8	82.970	46.01	68.07	2016
110.000	21.127	.04733	26.4867	755.195	6556.5	7124.5	89.468	45.38	68.27	1943
120.000	20.776	.04813	24.1790	688.248	7230.4	7808.0	95.416	44.82	68.43	1869
130.000	20.425	.04896	22.0767	626.062	7905.8	8493.3	100.900	44.37	68.63	1794
140.000	20.071	.04982	20.1685	568.597	8583.0	9180.9	105.996	44.04	68.90	1720
150.000	19.715	.05072	18.4372	515.578	9263.0	9871.6	110.761	43.82	69.27	1646
160.000	19.355	.05166	16.8642	466.642	9946.5	10566.5	115.246	43.71	69.74	1573
170.000	18.992	.05265	15.4313	421.402	10634.9	11266.7	119.491	43.70	70.33	1501
180.000	18.623	.05370	14.1221	379.509	11329.2	11973.5	123.531	43.77	71.05	1431
190.000	18.247	.05480	12.9213	340.636	12030.5	12688.1	127.394	43.92	71.89	1361
200.000	17.864	.05598	11.8156	304.508	12740.1	13411.9	131.106	44.14	72.87	1293
210.000	17.470	.05724	10.7932	270.889	13459.3	14146.1	134.688	44.42	74.01	1225
220.000	17.066	.05860	9.8438	239.590	14189.4	14892.5	138.161	44.76	75.31	1157
230.000	16.648	.06007	8.9583	210.457	14932.0	15652.9	141.540	45.16	76.80	1091
240.000	16.214	.06165	8.1296	183.375	15689.2	16429.3	144.844	45.62	78.52	1024
250.000	15.760	.06345	7.3490	158.256	16462.8	17224.2	148.089	46.15	80.49	958
260.000	15.284	.06543	6.6126	135.047	17257.3	18042.5	151.298	47.39	83.43	889
270.000	14.779	.06765	5.9151	113.714	18077.7	18889.7	154.495	48.05	86.33	823
280.000	14.241	.07022	5.2526	94.250	18923.2	19765.9	157.681	48.84	89.26	756
290.000	13.662	.07320	4.6226	76.672	19798.5	20676.9	160.878	49.76	93.06	690
300.000	13.032	.07674	4.0237	61.019	20708.8	21629.7	164.107	50.78	97.65	624
310.000	12.338	.08105	3.4562	47.358	21660.7	22633.2	167.397	51.89	103.26	559
320.000	11.567	.08646	2.9227	35.797	22661.7	23699.2	170.781	53.10	110.18	496
330.000	10.701	.09345	2.4288	26.514	23722.4	24843.8	174.508	56.42	120.54	434
340.000	9.738	.10269	1.9851	19.811	24856.7	26088.9	178.224	57.01	128.32	385
350.000	8.724	.11462	1.6092	15.992	26021.9	27397.4	182.017	57.79	132.26	348
360.000	7.767	.12874	1.3171	14.770	27162.7	28707.7	185.708	58.58	129.66	328
370.000	6.955	.14378	1.1032	15.045	28232.3	29957.7	189.134	59.32	121.20	319
380.000	6.292	.15892	.9461	15.849	29227.0	31134.0	192.271	60.07	114.28	316
390.000	5.752	.17384	.8277	16.989	30100.4	32246.5	195.161	60.85	108.38	317
400.000	5.310	.18831	.7364	18.395	31045.3	33305.0	197.841	61.68	103.50	320
410.000	4.945	.20222	.6645	19.956	31893.3	34319.9	200.348	62.55	99.65	325
420.000	4.639	.21555	.6065	21.592	32714.4	35301.0	202.712	63.48	96.72	330
430.000	4.379	.22834	.5589	23.252	33516.8	36256.8	204.961	64.44	94.55	336
440.000	4.156	.24063	.5191	24.909	34306.5	37194.1	207.116	65.43	92.99	343
450.000	3.961	.25249	.4853	26.547	35088.2	38118.1	209.192	66.44	91.89	349
460.000	3.789	.26396	.4562	28.157	35865.6	39033.1	211.203	67.47	91.16	355
470.000	3.635	.27508	.4309	29.735	36641.3	39942.3	213.159	68.52	90.73	361
480.000	3.498	.28590	.4086	31.280	37417.5	40848.3	215.066	69.57	90.52	367
490.000	3.373	.29645	.3889	32.792	38195.9	41753.2	216.932	70.63	90.49	373
500.000	3.260	.30675	.3712	34.272	38977.6	42658.6	218.761	71.69	90.61	379
520.000	3.061	.32673	.3410	37.140	40555.2	44476.0	222.325	73.81	91.19	390
540.000	2.890	.34600	.3159	39.896	42156.3	46308.4	225.783	75.92	92.09	401
560.000	2.742	.36469	.2948	42.553	43784.8	48161.0	229.152	78.00	93.21	411
580.000	2.612	.38288	.2766	45.123	45443.1	50037.6	232.444	80.06	94.43	420
600.000	2.496	.40066	.2609	47.616	47132.8	51940.6	235.670	82.08	95.84	430
620.000	2.392	.41808	.2471	50.041	48854.8	53871.8	238.836	84.06	97.28	438
640.000	2.298	.43519	.2348	52.405	50609.9	55832.2	241.948	86.01	98.77	447
660.000	2.212	.45204	.2239	54.716	52398.2	57822.7	245.010	87.93	100.28	455
680.000	2.134	.46865	.2140	56.979	54219.9	59843.6	248.027	89.81	101.82	463
700.000	2.062	.48505	.2051	59.199	56074.7	61895.3	251.000	91.65	103.36	471

Table 24. Continued.

ETHANE ISOBAR AT P = 130 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
92.426	21.755	.04597	31.0598	885.953	5369.7	5967.3	77.544	46.52	67.78	2071
100.000	21.490	.04653	29.0507	830.445	5876.8	6481.8	82.894	46.04	68.04	2020
110.000	21.141	.04730	26.5454	759.479	6548.2	7163.2	89.390	45.41	68.24	1948
120.000	20.791	.04810	24.2407	692.674	7221.1	7846.4	95.334	44.85	68.40	1874
130.000	20.440	.04892	22.1408	630.585	7895.3	8531.3	100.816	44.40	68.59	1799
140.000	20.088	.04978	20.2345	573.191	8571.3	9218.4	105.908	44.07	68.85	1725
150.000	19.734	.05067	18.5048	520.230	9249.8	9908.6	110.670	43.85	69.20	1652
160.000	19.377	.05161	16.9335	471.345	9931.9	10602.8	115.150	43.74	69.67	1580
170.000	19.015	.05259	15.5022	426.155	10618.5	11302.2	119.390	43.73	70.24	1508
180.000	18.649	.05362	14.1947	384.314	11310.9	12008.0	123.424	43.80	70.94	1438
190.000	18.276	.05472	12.9958	345.498	12010.1	12721.4	127.281	43.95	71.76	1369
200.000	17.896	.05588	11.8923	309.431	12717.2	13443.6	130.985	44.17	72.71	1301
210.000	17.507	.05712	10.8725	275.881	13433.6	14176.1	134.559	44.45	73.81	1234
220.000	17.107	.05845	9.9261	244.657	14160.4	14920.3	138.021	44.79	75.06	1167
230.000	16.695	.05990	9.0443	215.608	14899.2	15677.9	141.388	45.19	76.50	1101
240.000	16.268	.06147	8.2193	188.615	15651.7	16450.9	144.678	45.65	78.13	1036
250.000	15.822	.06320	7.4445	163.593	16419.8	17241.4	147.904	46.18	80.01	970
260.000	15.356	.06512	6.7143	140.484	17207.6	18054.2	151.092	47.42	82.81	903
270.000	14.865	.06727	6.0243	119.253	18019.6	18894.1	154.262	48.07	85.26	838
280.000	14.344	.06972	5.3708	99.888	18854.5	19760.8	157.413	48.86	88.16	774
290.000	13.788	.07253	4.7515	82.398	19716.1	20659.0	160.565	49.76	91.56	710
300.000	13.188	.07583	4.1653	66.806	20608.3	21594.1	163.734	50.77	95.56	646
310.000	12.537	.07978	3.6125	53.156	21535.7	22572.6	166.943	51.86	100.27	584
320.000	11.826	.08456	3.0952	41.512	22503.1	23602.4	170.212	53.02	105.83	524
330.000	11.044	.09055	2.6176	31.970	23517.2	24694.4	173.777	56.30	114.29	464
340.000	10.190	.09814	2.1866	24.688	24591.3	25867.0	177.277	56.84	120.25	416
350.000	9.286	.10769	1.8120	19.858	25694.5	27094.5	180.835	57.62	124.73	378
360.000	8.391	.11917	1.5048	17.458	26797.3	28346.5	184.361	58.47	124.78	352
370.000	7.583	.13187	1.2673	16.917	27860.4	29574.8	187.727	59.30	120.39	337
380.000	6.896	.14501	1.0862	17.360	28864.7	30749.8	190.861	60.13	114.63	331
390.000	6.323	.15816	.9515	18.174	29813.8	31870.0	193.771	60.96	109.56	329
400.000	5.843	.17115	.8447	19.252	30718.4	32943.4	196.489	61.82	105.25	330
410.000	5.440	.18383	.7599	20.553	31587.4	33977.2	199.042	62.71	101.64	332
420.000	5.099	.19612	.6914	22.000	32428.9	34978.6	201.455	63.64	98.74	336
430.000	4.808	.20801	.6350	23.527	33250.1	35954.2	203.751	64.60	96.49	341
440.000	4.556	.21949	.5879	25.094	34056.8	36910.1	205.948	65.59	94.79	347
450.000	4.337	.23059	.5481	26.671	34853.7	37851.4	208.064	66.60	93.54	352
460.000	4.143	.24135	.5138	28.242	35644.6	38782.2	210.110	67.62	92.69	358
470.000	3.971	.25180	.4842	29.798	36432.5	39705.8	212.096	68.66	92.11	364
480.000	3.817	.26196	.4581	31.332	37219.5	40625.0	214.031	69.71	91.78	370
490.000	3.678	.27188	.4351	32.840	38007.6	41542.0	215.922	70.76	91.65	376
500.000	3.552	.28156	.4146	34.323	38798.2	42458.4	217.773	71.82	91.67	381
520.000	3.330	.30033	.3796	37.209	40391.1	44295.4	221.376	73.93	92.09	392
540.000	3.141	.31841	.3508	39.992	42005.1	46144.4	224.865	76.02	92.87	403
560.000	2.977	.33593	.3266	42.682	43644.5	48011.6	228.260	78.09	93.88	413
580.000	2.833	.35298	.3059	45.286	45312.1	49900.9	231.575	80.14	95.07	422
600.000	2.706	.36962	.2880	47.814	47010.0	51815.1	234.819	82.15	96.37	431
620.000	2.591	.38591	.2723	50.273	48739.3	53756.2	238.002	84.13	97.75	440
640.000	2.488	.40190	.2585	52.671	50500.8	55725.5	241.128	86.08	99.19	449
660.000	2.394	.41763	.2461	55.014	52294.9	57724.0	244.203	87.99	100.67	457
680.000	2.309	.43312	.2351	57.308	54121.7	59752.3	247.230	89.87	102.17	465
700.000	2.230	.44842	.2251	59.558	55981.3	61810.7	250.213	91.70	103.68	473

Table 24. Continued.

ETHANE ISOBAR AT P = 140 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
92.583	21.761	.04595	31.0677	888.600	5373.7	6017.1	77.586	46.53	67.77	2074
100.000	21.502	.04651	29.1052	834.498	5869.6	6520.7	82.819	46.07	68.02	2024
110.000	21.154	.04727	26.6040	763.751	6540.0	7201.9	89.312	45.43	68.21	1952
120.000	20.805	.04806	24.3022	697.088	7211.8	7884.7	95.254	44.88	68.36	1879
130.000	20.456	.04888	22.2045	635.096	7884.9	8569.3	100.732	44.43	68.54	1805
140.000	20.106	.04974	20.3001	577.774	8559.7	9256.0	105.821	44.10	68.80	1731
150.000	19.753	.05062	18.5721	524.869	9236.8	9945.6	110.578	43.88	69.14	1658
160.000	19.398	.05155	17.0023	476.034	9917.4	10639.1	115.055	43.77	69.59	1586
170.000	19.039	.05252	15.5726	430.893	10602.4	11337.7	119.290	43.76	70.15	1515
180.000	18.675	.05355	14.2667	389.101	11292.9	12042.5	123.318	43.83	70.83	1446
190.000	18.305	.05463	13.0697	350.338	11990.0	12754.8	127.169	43.98	71.63	1377
200.000	17.928	.05578	11.9683	314.329	12694.7	13475.6	130.866	44.20	72.56	1309
210.000	17.543	.05700	10.9509	280.844	13408.3	14206.4	134.431	44.48	73.62	1243
220.000	17.148	.05832	10.0074	249.690	14132.0	14948.4	137.883	44.82	74.83	1177
230.000	16.741	.05973	9.1289	220.717	14867.1	15703.4	141.239	45.22	76.21	1112
240.000	16.320	.06123	8.3079	193.807	15615.3	16473.2	144.515	45.68	77.77	1047
250.000	15.883	.06296	7.5379	168.873	16378.2	17259.7	147.725	46.21	79.55	983
260.000	15.426	.06483	6.8134	145.851	17159.7	18067.3	150.893	47.45	82.23	916
270.000	14.947	.06690	6.1301	124.709	17964.0	18900.7	154.037	48.10	84.51	853
280.000	14.442	.06924	5.4845	105.427	18789.4	19758.8	157.158	48.88	87.18	790
290.000	13.905	.07192	4.8745	88.005	19638.9	20645.7	160.270	49.77	90.27	728
300.000	13.332	.07501	4.2989	72.457	20515.6	21565.8	163.389	50.76	93.81	667
310.000	12.716	.07864	3.7580	58.805	21422.8	22523.7	166.529	51.83	97.87	607
320.000	12.052	.08298	3.2535	47.083	22363.5	23525.1	169.708	52.97	102.50	550
330.000	11.333	.08824	2.7885	37.336	23342.4	24577.8	173.153	56.20	109.71	492
340.000	10.559	.09470	2.3675	29.640	24372.2	25698.0	176.497	56.71	114.37	445
350.000	9.743	.10264	1.9966	24.095	25426.5	26863.5	179.874	57.47	118.48	406
360.000	8.918	.11214	1.6825	20.729	26489.5	28059.4	183.243	58.34	120.16	376
370.000	8.138	.12289	1.4287	19.282	27534.4	29254.8	186.519	59.24	118.38	357
380.000	7.445	.13432	1.2304	19.151	28538.9	30419.3	189.624	60.12	114.32	347
390.000	6.852	.14595	1.0767	19.697	29496.8	31540.1	192.536	61.01	109.90	343
400.000	6.347	.15756	.9556	20.517	30413.6	32619.5	195.269	61.90	106.10	341
410.000	5.916	.16905	.8585	21.552	31297.4	33664.0	197.848	62.82	102.89	342
420.000	5.546	.18031	.7795	22.774	32154.7	34679.0	200.294	63.77	100.20	344
430.000	5.228	.19129	.7143	24.129	32991.6	35669.6	202.625	64.73	98.01	348
440.000	4.951	.20197	.6598	25.565	33813.1	36640.7	204.858	65.72	96.29	352
450.000	4.709	.21239	.6136	27.048	34623.8	37596.7	207.006	66.73	94.98	357
460.000	4.496	.22243	.5740	28.552	35427.3	38541.4	209.083	67.76	94.02	362
470.000	4.306	.23225	.5398	30.060	36226.6	39478.0	211.097	68.79	93.36	368
480.000	4.135	.24181	.5098	31.562	37024.0	40409.3	213.058	69.83	92.94	373
490.000	3.982	.25114	.4833	33.050	37821.5	41337.5	214.971	70.88	92.72	379
500.000	3.842	.26026	.4598	34.520	38620.6	42264.3	216.844	71.93	92.67	384
520.000	3.598	.27794	.4197	37.400	40228.5	44119.7	220.483	74.03	92.95	395
540.000	3.390	.29498	.3869	40.193	41855.1	45984.8	224.002	76.12	93.61	405
560.000	3.211	.31146	.3594	42.901	43505.3	47866.0	227.422	78.18	94.54	415
580.000	3.053	.32751	.3360	45.529	45182.3	49767.5	230.759	80.22	95.65	424
600.000	2.914	.34316	.3158	48.083	46888.3	51692.5	234.022	82.23	96.88	434
620.000	2.790	.35847	.2982	50.570	48624.8	53643.3	237.220	84.20	98.21	442
640.000	2.677	.37349	.2827	52.995	50392.6	55621.4	240.360	86.14	99.61	451
660.000	2.576	.38825	.2689	55.366	52192.4	57627.8	243.447	88.05	101.04	459
680.000	2.483	.40278	.2566	57.687	54024.4	59663.3	246.485	89.92	102.51	467
700.000	2.397	.41711	.2454	59.963	55888.7	61728.3	249.478	91.76	103.99	475

Table 24. Continued.

ETHANE ISOBAR AT P = 150 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
92.740	21.767	.04594	31.0759	891.245	5377.7	6066.8	77.627	46.55	67.76	2077
100.000	21.514	.04648	29.1597	838.544	5862.5	6559.7	82.743	46.09	68.00	2028
110.000	21.167	.04724	26.6623	768.011	6531.9	7240.6	89.234	45.46	68.19	1957
120.000	20.820	.04803	24.3634	701.491	7202.7	7923.2	95.173	44.90	68.33	1884
130.000	20.472	.04885	22.2680	639.596	7874.6	8607.3	100.649	44.46	68.50	1810
140.000	20.123	.04969	20.3655	582.344	8548.1	9293.6	105.734	44.12	68.75	1737
150.000	19.772	.05058	18.6391	529.496	9224.0	9982.6	110.488	43.91	69.08	1664
160.000	19.419	.05150	17.0707	480.709	9903.1	10675.5	114.960	43.80	69.52	1592
170.000	19.062	.05246	15.6426	435.614	10586.4	11373.3	119.191	43.79	70.07	1522
180.000	18.700	.05348	14.3383	393.870	11275.1	12077.2	123.214	43.86	70.73	1453
190.000	18.333	.05455	13.1430	355.157	11970.1	12788.3	127.058	44.01	71.51	1385
200.000	17.960	.05568	12.0435	319.204	12672.6	13507.8	130.748	44.23	72.41	1318
210.000	17.578	.05689	11.0284	285.778	13383.6	14236.9	134.305	44.51	73.44	1252
220.000	17.187	.05818	10.0876	254.690	14104.2	14976.9	137.748	44.85	74.61	1186
230.000	16.786	.05958	9.2123	225.738	14835.8	15729.4	141.093	45.25	75.93	1122
240.000	16.371	.06108	8.3950	198.953	15579.9	16496.1	144.356	45.71	77.43	1058
250.000	15.941	.06273	7.6294	174.096	16337.9	17278.8	147.550	46.23	79.13	995
260.000	15.493	.06454	6.9101	151.154	17113.6	18081.7	150.699	47.48	81.69	930
270.000	15.026	.06655	6.2328	130.088	17910.8	18909.1	153.821	48.12	83.83	868
280.000	14.534	.06883	5.5942	110.876	18727.5	19759.5	156.914	48.90	86.31	806
290.000	14.015	.07135	4.9922	93.508	19566.2	20636.5	159.991	49.79	89.14	746
300.000	13.465	.07427	4.4257	77.989	20429.4	21543.4	163.066	50.76	92.32	686
310.000	12.879	.07765	3.8947	64.326	21319.5	22484.2	166.150	51.82	95.89	629
320.000	12.253	.08162	3.4006	52.529	22238.3	23462.6	169.256	52.93	99.85	574
330.000	11.583	.08633	2.9455	42.612	23189.6	24484.6	172.606	56.13	106.21	517
340.000	10.871	.09199	2.5326	34.597	24185.3	25565.1	175.831	56.61	109.94	472
350.000	10.124	.09878	2.1657	28.523	25201.2	26682.9	179.071	57.35	113.51	433
360.000	9.362	.10681	1.8488	24.408	26228.6	27830.8	182.304	58.23	115.75	401
370.000	8.622	.11598	1.5846	22.127	27250.1	28989.8	185.480	59.16	115.63	379
380.000	7.941	.12593	1.3713	21.310	28246.7	30135.7	188.536	60.09	113.27	365
390.000	7.338	.13627	1.2021	21.437	29207.5	31251.5	191.435	61.02	109.83	358
400.000	6.817	.14669	1.0675	22.052	30132.1	32332.4	194.171	61.95	106.43	354
410.000	6.366	.15708	.9589	22.877	31025.7	33381.9	196.763	62.89	103.55	353
420.000	5.975	.16735	.8699	23.879	31894.6	34404.9	199.228	63.86	101.13	354
430.000	5.635	.17746	.7960	25.041	32743.8	35405.7	201.583	64.84	99.11	356
440.000	5.337	.18737	.7341	26.321	33577.7	36388.2	203.842	65.83	97.46	359
450.000	5.075	.19704	.6815	27.682	34400.4	37356.0	206.017	66.84	96.16	363
460.000	4.843	.20649	.6364	29.092	35215.1	38312.4	208.119	67.87	95.17	368
470.000	4.636	.21570	.5974	30.529	36024.8	39260.4	210.158	68.90	94.46	373
480.000	4.450	.22470	.5633	31.978	36831.9	40202.4	212.141	69.94	93.99	378
490.000	4.283	.23349	.5332	33.428	37638.3	41140.7	214.076	70.99	93.71	383
500.000	4.131	.24210	.5065	34.871	38445.6	42077.0	215.968	72.03	93.59	388
520.000	3.864	.25879	.4612	37.720	40067.9	43949.8	219.640	74.12	93.76	398
540.000	3.638	.27488	.4241	40.504	41706.8	45830.0	223.188	76.20	94.32	408
560.000	3.443	.29046	.3932	43.215	43367.5	47724.4	226.633	78.26	95.16	418
580.000	3.272	.30561	.3669	45.855	45053.6	49637.7	229.990	80.30	96.20	427
600.000	3.121	.32037	.3444	48.426	46767.7	51573.3	233.271	82.30	97.38	436
620.000	2.987	.33482	.3247	50.933	48511.2	53533.5	236.484	84.27	98.66	445
640.000	2.866	.34898	.3075	53.380	50285.4	55520.0	239.638	86.20	100.01	453
660.000	2.756	.36288	.2922	55.773	52090.8	57534.1	242.736	88.11	101.41	462
680.000	2.655	.37658	.2785	58.116	53927.9	59576.6	245.785	89.98	102.84	470
700.000	2.564	.39008	.2662	60.414	55796.8	61648.0	248.787	91.81	104.30	477

Table 24. Continued.

ETHANE ISOBAR AT P = 160 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
92.897	21.773	.04593	31.0842	893.888	5381.7	6116.6	77.668	46.56	67.75	2079
100.000	21.526	.04646	29.2138	842.562	5855.4	6598.7	82.669	46.12	67.98	2032
110.000	21.180	.04721	26.7204	772.258	6523.9	7279.3	89.157	45.49	68.16	1961
120.000	20.834	.04800	24.4245	705.883	7193.6	7961.6	95.093	44.93	68.30	1888
130.000	20.488	.04881	22.3313	644.085	7864.4	8645.4	100.566	44.48	68.46	1815
140.000	20.140	.04965	20.4305	586.903	8536.8	9331.2	105.648	44.15	68.70	1742
150.000	19.791	.05053	18.7057	534.110	9211.3	10019.7	110.398	43.94	69.03	1670
160.000	19.440	.05144	17.1388	485.370	9888.9	10712.0	114.866	43.83	69.45	1599
170.000	19.085	.05240	15.7121	440.320	10570.7	11409.0	119.092	43.82	69.99	1529
180.000	18.726	.05340	14.4093	398.621	11257.6	12112.0	123.110	43.89	70.63	1460
190.000	18.361	.05446	13.2157	359.957	11950.6	12822.0	126.949	44.04	71.39	1392
200.000	17.991	.05558	12.1181	324.055	12650.9	13540.2	130.632	44.26	72.26	1326
210.000	17.613	.05678	11.1052	290.686	13359.3	14267.7	134.181	44.54	73.26	1260
220.000	17.226	.05805	10.1668	259.659	14077.0	15005.8	137.615	44.88	74.39	1196
230.000	16.829	.05942	9.2945	230.822	14805.2	15755.9	140.950	45.28	75.67	1132
240.000	16.420	.06090	8.4807	204.055	15545.3	16519.7	144.200	45.74	77.11	1069
250.000	15.997	.06251	7.7191	179.269	16298.7	17298.9	147.380	46.26	78.73	1007
260.000	15.558	.06427	7.0045	156.399	17068.9	18097.3	150.512	47.50	81.20	942
270.000	15.101	.06622	6.3326	135.398	17859.6	18919.1	153.613	48.15	83.21	882
280.000	14.622	.06838	5.7003	116.243	18668.4	19762.6	156.680	48.92	85.53	822
290.000	14.119	.07083	5.1054	98.918	19497.4	20630.6	159.726	49.80	88.13	763
300.000	13.589	.07359	4.5467	83.418	20348.8	21526.2	162.762	50.77	91.03	705
310.000	13.028	.07676	4.0241	69.735	21224.1	22452.2	165.798	51.81	94.22	649
320.000	12.434	.08043	3.5384	57.866	22124.7	23411.5	168.843	52.90	97.68	596
330.000	11.805	.08471	3.0914	47.800	23053.5	24408.9	172.117	56.08	103.43	541
340.000	11.141	.08976	2.6851	39.527	24022.1	25458.2	175.249	56.53	106.49	497
350.000	10.449	.09570	2.3219	33.045	25007.4	26538.6	178.381	57.26	109.56	458
360.000	9.742	.10264	2.0042	28.347	26004.4	27646.8	181.503	58.13	111.88	425
370.000	9.045	.11056	1.7335	25.359	27002.0	28771.0	184.583	59.07	112.67	401
380.000	8.385	.11927	1.5091	23.857	27985.6	29893.9	187.577	60.03	111.63	384
390.000	7.785	.12845	1.3268	23.461	28943.9	30999.2	190.449	61.00	109.28	373
400.000	7.254	.13785	1.1795	23.759	29872.4	32078.0	193.180	61.96	106.48	368
410.000	6.790	.14728	1.0599	24.420	30772.8	33129.3	195.776	62.94	103.85	366
420.000	6.383	.15667	.9615	25.250	31649.8	34156.5	198.251	63.92	101.66	365
430.000	6.025	.16596	.8794	26.227	32508.3	35163.7	200.621	64.91	99.83	366
440.000	5.710	.17513	.8102	27.341	33352.1	36154.1	202.898	65.92	98.31	368
450.000	5.431	.18413	.7512	28.562	34184.7	37130.8	205.093	66.93	97.08	371
460.000	5.182	.19296	.7006	29.859	35009.2	38096.6	207.216	67.96	96.12	374
470.000	4.960	.20160	.6568	31.206	35828.3	39054.0	209.275	69.00	95.40	378
480.000	4.760	.21007	.6184	32.584	36644.2	40005.3	211.278	70.04	94.90	383
490.000	4.580	.21836	.5846	33.979	37458.8	40952.5	213.231	71.08	94.58	387
500.000	4.415	.22648	.5547	35.379	38273.7	41897.4	215.140	72.12	94.43	392
520.000	4.128	.24226	.5039	38.173	39909.8	43785.9	218.844	74.21	94.51	402
540.000	3.884	.25749	.4624	40.928	41560.4	45680.3	222.418	76.29	94.99	411
560.000	3.673	.27225	.4279	43.628	43231.3	47587.3	225.886	78.34	95.76	421
580.000	3.489	.28659	.3987	46.268	44926.4	49511.8	229.262	80.37	96.73	430
600.000	3.327	.30057	.3736	48.846	46648.3	51457.5	232.560	82.36	97.86	439
620.000	3.182	.31424	.3519	51.364	48398.8	53426.7	235.789	84.33	99.09	448
640.000	3.052	.32764	.3328	53.827	50179.1	55421.5	238.955	86.26	100.40	456
660.000	2.934	.34080	.3159	56.236	51990.1	57443.0	242.066	88.16	101.77	464
680.000	2.827	.35375	.3008	58.597	53832.2	59492.3	245.124	90.03	103.17	472
700.000	2.728	.36651	.2873	60.913	55705.7	61569.9	248.136	91.85	104.60	480

Table 24. Continued.

ETHANE ISOBAR AT P = 170 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
93.054	21.778	.04592	31.0926	896.529	5385.7	6106.3	77.709	46.58	67.74	2082
100.000	21.538	.04643	29.2678	846.573	5848.3	6637.6	82.594	46.14	67.36	2036
110.000	21.193	.04719	26.7784	776.494	6515.9	7318.0	89.080	45.51	68.13	1966
120.000	20.848	.04797	24.4853	710.263	7184.6	8000.0	95.014	44.96	68.26	1893
130.000	20.503	.04877	22.3943	648.563	7854.3	8683.5	100.484	44.51	68.42	1820
140.000	20.157	.04961	20.4953	591.451	8525.5	9368.8	105.562	44.18	68.65	1748
150.000	19.810	.05048	18.7720	538.711	9198.7	10056.9	110.309	43.97	68.97	1676
160.000	19.460	.05139	17.2065	490.018	9874.9	10748.5	114.773	43.86	69.39	1605
170.000	19.107	.05234	15.7812	445.012	10555.1	11444.8	118.995	43.85	69.90	1536
180.000	18.750	.05333	14.4798	403.355	11240.3	12146.9	123.008	43.92	70.53	1467
190.000	18.389	.05438	13.2878	364.737	11931.4	12855.9	126.840	44.07	71.27	1400
200.000	18.021	.05549	12.1920	328.884	12629.4	13572.8	130.517	44.29	72.12	1334
210.000	17.647	.05667	11.1811	295.567	13335.4	14298.7	134.059	44.57	73.09	1269
220.000	17.264	.05792	10.2451	264.597	14050.3	15035.0	137.484	44.91	74.19	1205
230.000	16.872	.05927	9.3755	235.821	14775.3	15782.9	140.809	45.31	75.42	1142
240.000	16.469	.06072	8.5649	209.117	15511.7	16543.9	144.047	45.77	76.81	1080
250.000	16.052	.06230	7.8071	184.394	16260.7	17319.7	147.214	46.29	78.36	1018
260.000	15.621	.06401	7.0968	161.585	17025.8	18114.0	150.329	47.53	80.74	955
270.000	15.173	.06591	6.4299	140.642	17810.3	18930.7	153.411	48.17	82.64	895
280.000	14.706	.06800	5.8032	121.536	18611.8	19767.8	156.455	48.94	84.81	836
290.000	14.218	.07034	5.2145	104.244	19432.1	20627.8	159.473	49.81	87.24	779
300.000	13.705	.07297	4.6626	88.753	20272.9	21513.3	162.474	50.77	89.90	722
310.000	13.166	.07595	4.1471	75.047	21135.3	22426.5	165.469	51.80	92.78	668
320.000	12.599	.07937	3.6686	63.107	22020.4	23369.7	168.463	52.88	95.87	616
330.000	12.003	.08331	3.2282	52.908	22930.4	24346.6	171.674	56.04	101.15	563
340.000	11.380	.08788	2.8273	44.418	23876.9	25370.7	174.731	56.47	103.72	520
350.000	10.733	.09317	2.4674	37.607	24837.4	26421.3	177.776	57.18	106.37	482
360.000	10.072	.09929	2.1497	32.445	25808.9	27496.7	180.806	58.05	108.60	449
370.000	9.414	.10622	1.8750	28.873	26784.0	28589.9	183.800	58.99	109.83	422
380.000	8.781	.11389	1.6425	26.745	27752.5	29688.6	186.731	59.98	109.69	403
390.000	8.192	.12208	1.4496	25.797	28704.1	30779.5	189.564	60.97	108.31	390
400.000	7.659	.13056	1.2912	25.691	29632.8	31852.4	192.281	61.96	106.21	382
410.000	7.186	.13916	1.1612	26.106	30537.4	32903.2	194.875	62.95	103.97	378
420.000	6.767	.14777	1.0536	26.802	31420.4	33932.4	197.356	63.96	101.94	376
430.000	6.397	.15632	.9636	27.634	32285.7	34943.2	199.734	64.96	100.27	376
440.000	6.068	.16480	.8874	28.593	33137.2	35938.8	202.023	65.98	98.89	377
450.000	5.775	.17317	.8223	29.669	33977.9	36921.8	204.232	67.01	97.76	379
460.000	5.512	.18142	.7662	30.841	34810.6	37894.7	206.371	68.04	96.86	382
470.000	5.276	.18952	.7176	32.083	35637.8	38859.7	208.446	69.08	96.17	385
480.000	5.064	.19748	.6750	33.375	36461.5	39818.7	210.465	70.12	95.67	389
490.000	4.871	.20530	.6374	34.701	37283.6	40773.6	212.434	71.16	95.34	393
500.000	4.696	.21297	.6041	36.046	38105.6	41726.0	214.358	72.21	95.17	397
520.000	4.388	.22790	.5477	38.761	39754.4	43628.8	218.090	74.29	95.19	406
540.000	4.126	.24234	.5017	41.469	41416.3	45536.1	221.689	76.36	95.61	415
560.000	3.901	.25634	.4634	44.142	43097.1	47454.9	225.178	78.41	96.31	424
580.000	3.704	.26995	.4312	46.769	44800.8	49390.0	228.573	80.43	97.23	433
600.000	3.531	.28323	.4035	49.345	46530.3	51345.2	231.887	82.43	98.31	442
620.000	3.376	.29621	.3796	51.867	48287.6	53323.1	235.130	84.39	99.50	450
640.000	3.237	.30893	.3586	54.337	50074.0	55325.8	238.309	86.32	100.78	459
660.000	3.111	.32141	.3401	56.758	51890.5	57354.5	241.430	88.21	102.11	467
680.000	2.997	.33370	.3236	59.131	53737.5	59410.4	244.499	90.08	103.49	475
700.000	2.892	.34580	.3088	61.462	55615.5	61494.0	247.519	91.90	104.89	482

Table 24. Continued.

ETHANE ISOBAR AT P = 180 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
93.210	21.784	.04590	31.1013	899.168	5389.7	6216.0	77.750	46.59	67.72	2084
100.000	21.550	.04640	29.3217	850.569	5841.3	6676.6	82.520	46.17	67.33	2040
110.000	21.206	.04716	26.8361	780.718	6508.0	7356.8	89.003	45.54	66.11	1976
120.000	20.862	.04793	24.5459	714.632	7175.7	8038.5	94.935	44.99	66.23	1898
130.000	20.518	.04874	22.4570	653.029	7844.3	8721.6	100.402	44.54	66.39	1826
140.000	20.174	.04957	20.5597	595.987	8514.3	9406.5	105.477	44.21	66.61	1753
150.000	19.828	.05043	18.8379	543.301	9186.2	10094.0	110.221	43.99	66.91	1682
160.000	19.480	.05133	17.2738	494.652	9861.1	10785.1	114.681	43.89	69.32	1611
170.000	19.130	.05228	15.8498	449.688	10539.7	11480.7	118.898	43.87	69.83	1542
180.000	18.775	.05326	14.5498	408.073	11223.2	12181.9	122.906	43.95	70.44	1474
190.000	18.416	.05430	13.3593	369.497	11912.4	12889.8	126.733	44.10	71.16	1408
200.000	18.052	.05540	12.2652	333.691	12608.4	13605.5	130.404	44.32	71.99	1342
210.000	17.681	.05656	11.2562	300.424	13311.9	14330.0	133.938	44.60	72.93	1278
220.000	17.302	.05780	10.3225	269.507	14024.1	15064.5	137.355	44.94	74.00	1214
230.000	16.914	.05912	9.4555	240.786	14746.0	15810.2	140.670	45.34	75.19	1152
240.000	16.516	.06055	8.6479	214.139	15478.8	16568.7	143.898	45.79	76.52	1090
250.000	16.106	.06208	7.8935	189.474	16223.7	17341.3	147.051	46.32	78.01	1030
260.000	15.682	.06377	7.1871	166.720	16983.9	18131.7	150.151	47.56	80.31	967
270.000	15.243	.06560	6.5247	145.828	17762.8	18943.7	153.215	48.19	82.12	909
280.000	14.787	.06763	5.9031	126.761	18557.6	19774.9	156.238	48.96	84.16	851
290.000	14.311	.06988	5.3200	109.494	19369.9	20627.7	159.230	49.83	86.43	794
300.000	13.814	.07239	4.7746	94.004	20201.2	21504.1	162.202	50.78	88.90	739
310.000	13.295	.07522	4.2647	80.270	21052.3	22406.2	165.159	51.80	91.54	686
320.000	12.752	.07842	3.7923	68.262	21923.8	23335.4	168.109	52.86	94.32	636
330.000	12.184	.08208	3.3574	57.942	22817.9	24295.2	171.268	56.01	99.26	584
340.000	11.593	.08626	2.9610	49.263	23745.9	25298.5	174.263	56.43	101.45	542
350.000	10.984	.09104	2.6039	42.177	24685.7	26324.6	177.237	57.12	103.76	504
360.000	10.362	.09651	2.2866	36.636	25635.7	27372.9	180.190	57.98	105.83	471
370.000	9.740	.10267	2.0093	32.582	26590.9	28439.0	183.111	58.93	107.25	444
380.000	9.134	.10945	1.7710	29.908	27543.9	29514.5	185.979	59.92	107.68	422
390.000	8.561	.11681	1.5698	28.427	28486.4	30589.0	188.770	60.93	107.05	407
400.000	8.033	.12449	1.4018	27.876	29412.1	31652.9	191.463	61.94	105.64	397
410.000	7.556	.13235	1.2622	27.973	30318.3	32700.5	194.050	62.96	103.86	391
420.000	7.129	.14026	1.1460	28.473	31205.3	33730.1	196.531	63.98	102.09	388
430.000	6.749	.14817	1.0483	29.194	32075.9	34742.9	198.915	65.00	100.53	387
440.000	6.409	.15602	.9653	30.029	32933.3	35741.7	201.211	66.03	99.27	387
450.000	6.105	.16381	.8943	30.972	33780.4	36729.0	203.430	67.06	98.24	388
460.000	5.831	.17151	.8329	32.018	34619.9	37707.1	205.580	68.10	97.42	390
470.000	5.583	.17911	.7794	33.149	35454.0	38678.0	207.667	69.14	96.78	392
480.000	5.359	.18660	.7326	34.345	36284.5	39643.2	209.700	70.19	96.31	395
490.000	5.156	.19396	.6913	35.590	37113.2	40604.5	211.682	71.23	95.99	399
500.000	4.970	.20121	.6546	36.869	37941.6	41563.4	213.619	72.28	95.81	403
520.000	4.644	.21535	.5924	39.484	39602.3	43478.6	217.375	74.36	95.80	411
540.000	4.366	.22906	.5418	42.127	41274.7	45397.8	220.996	76.43	96.17	419
560.000	4.126	.24236	.4998	44.759	42964.9	47327.4	224.505	78.48	96.83	428
580.000	3.917	.25531	.4644	47.362	44676.9	49272.5	227.918	80.50	97.71	437
600.000	3.732	.26794	.4341	49.924	46413.8	51236.7	231.247	82.49	98.74	445
620.000	3.568	.28029	.4079	52.441	48177.7	53222.9	234.504	84.44	99.90	454
640.000	3.420	.29239	.3850	54.912	49970.1	55233.1	237.694	86.37	101.14	462
660.000	3.287	.30427	.3647	57.338	51791.9	57268.7	240.826	88.26	102.44	470
680.000	3.165	.31595	.3467	59.720	53643.8	59330.9	243.905	90.12	103.79	478
700.000	3.054	.32746	.3306	62.060	55526.1	61420.4	246.933	91.95	105.17	485

Table 24. Continued.

ETHANE ISOBAR AT P = 200 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
93.522	21.796	.04588	31.1191	904.440	5397.7	6315.3	77.830	46.62	67.70	2089
100.000	21.573	.04635	29.4290	858.520	5827.5	6754.6	82.372	46.22	67.89	2047
110.000	21.231	.04710	26.9511	789.129	6492.3	7434.3	88.851	45.59	68.06	1979
120.000	20.890	.04787	24.6664	723.337	7158.0	8115.4	94.778	45.04	68.17	1908
130.000	20.549	.04866	22.5817	661.930	7824.6	8797.9	100.239	44.59	68.31	1836
140.000	20.207	.04949	20.6878	605.026	8492.2	9482.0	105.309	44.27	68.52	1764
150.000	19.865	.05034	18.9688	552.445	9161.7	10168.5	110.046	44.05	68.81	1694
160.000	19.520	.05123	17.4073	503.883	9833.8	10858.4	114.498	43.94	69.19	1624
170.000	19.174	.05216	15.9859	459.001	10509.5	11552.6	118.707	43.93	69.68	1555
180.000	18.824	.05312	14.6885	417.460	11189.7	12252.2	122.706	44.00	70.26	1488
190.000	18.470	.05414	13.5007	378.964	11875.3	12958.2	126.522	44.16	70.94	1422
200.000	18.111	.05522	12.4098	343.242	12567.2	13671.5	130.181	44.37	71.73	1358
210.000	17.746	.05635	11.4043	310.065	13266.2	14393.2	133.702	44.66	72.63	1294
220.000	17.375	.05755	10.4747	279.243	13973.3	15124.4	137.103	45.00	73.63	1232
230.000	16.996	.05884	9.6123	250.620	14689.3	15866.1	140.400	45.39	74.75	1171
240.000	16.607	.06021	8.8101	224.074	15415.4	16619.7	143.607	45.85	75.99	1111
250.000	16.209	.06169	8.0618	199.507	16152.6	17386.5	146.737	46.37	77.37	1052
260.000	15.799	.06330	7.3625	176.846	16904.0	18169.9	149.810	47.61	79.54	991
270.000	15.376	.06504	6.7079	156.033	17672.5	18973.3	152.841	48.24	81.18	934
280.000	14.938	.06694	6.0950	137.025	18455.3	19794.1	155.826	49.00	83.02	878
290.000	14.486	.06903	5.5213	119.787	19253.6	20634.2	158.774	49.86	85.03	824
300.000	14.016	.07135	4.9852	104.287	20068.4	21495.3	161.693	50.80	87.20	771
310.000	13.529	.07391	4.4860	90.487	20900.3	22378.5	164.589	51.81	89.47	720
320.000	13.025	.07678	4.0233	78.346	21749.4	23285.0	167.467	52.85	91.82	672
330.000	12.503	.07998	3.5972	67.808	22617.7	24217.3	170.541	55.97	96.26	622
340.000	11.964	.08358	3.2078	58.810	23516.4	25188.0	173.438	56.36	97.92	582
350.000	11.413	.08762	2.8552	51.282	24423.9	26176.3	176.303	57.04	99.75	546
360.000	10.853	.09214	2.5390	45.154	25339.9	27182.7	179.138	57.87	101.51	513
370.000	10.291	.09717	2.2586	40.356	26262.1	28205.5	181.940	58.81	102.98	484
380.000	9.737	.10270	2.0128	36.808	27186.4	29240.5	184.700	59.81	103.93	461
390.000	9.201	.10868	1.7998	34.398	28108.1	30281.8	187.405	60.84	104.22	442
400.000	8.694	.11503	1.6172	32.972	29022.1	31322.7	190.040	61.88	103.87	428
410.000	8.222	.12163	1.4618	32.336	29924.9	32357.4	192.595	62.93	103.01	419
420.000	7.790	.12837	1.3299	32.287	30814.6	33382.0	195.065	63.98	101.90	413
430.000	7.398	.13518	1.2178	32.640	31691.6	34395.2	197.449	65.03	100.74	410
440.000	7.043	.14199	1.1220	33.249	32557.3	35397.1	199.752	66.09	99.68	408
450.000	6.721	.14878	1.0396	34.005	33413.7	36389.3	201.982	67.14	98.79	407
460.000	6.430	.15552	.9680	34.844	34263.2	37373.6	204.145	68.19	98.11	408
470.000	6.165	.16221	.9054	35.764	35107.7	38352.0	206.249	69.24	97.59	409
480.000	5.923	.16884	.8503	36.764	35949.0	39325.8	208.300	70.30	97.21	411
490.000	5.701	.17540	.8016	37.832	36788.5	40296.5	210.301	71.35	96.95	413
500.000	5.498	.18188	.7582	38.956	37627.6	41265.1	212.258	72.40	96.80	416
520.000	5.135	.19459	.6845	41.325	39308.8	43200.5	216.053	74.48	96.81	422
540.000	4.832	.20696	.6244	43.791	41000.2	45139.5	219.712	76.55	97.14	429
560.000	4.566	.21902	.5746	46.301	42707.5	47088.0	223.255	78.59	97.75	437
580.000	4.333	.23079	.5326	48.820	44435.0	49050.8	226.699	80.61	98.56	445
600.000	4.128	.24228	.4968	51.327	46185.9	51031.4	230.056	82.59	99.53	453
620.000	3.944	.25352	.4659	53.810	47962.3	53032.8	233.338	84.55	100.63	461
640.000	3.780	.26453	.4390	56.262	49766.0	55056.9	236.551	86.47	101.81	469
660.000	3.631	.27537	.4152	58.680	51598.1	57105.5	239.703	88.36	103.06	477
680.000	3.496	.28602	.3941	61.062	53459.4	59179.7	242.798	90.21	104.36	484
700.000	3.373	.29650	.3753	63.408	55350.3	61280.2	245.843	92.03	105.70	492

Table 24. Continued.

ETHANE ISOBAR AT P = 220 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
93.832	21.807	.04586	31.1375	909.704	5405.7	6414.6	77.910	46.65	67.68	2095
100.000	21.596	.04630	29.5358	866.414	5813.9	6832.6	82.225	46.27	67.86	2055
110.000	21.256	.04704	27.0654	797.492	6476.9	7511.9	88.700	45.64	68.01	1987
120.000	20.917	.04781	24.7860	731.998	7140.7	8192.4	94.622	45.09	68.11	1917
130.000	20.579	.04859	22.7054	670.787	7805.2	8874.2	100.079	44.65	68.24	1846
140.000	20.240	.04941	20.8147	614.021	8470.6	9557.6	105.142	44.32	68.43	1775
150.000	19.901	.05025	19.0985	561.542	9137.7	10243.2	109.873	44.11	68.71	1705
160.000	19.560	.05113	17.5394	513.063	9807.2	10932.0	114.318	44.00	69.07	1636
170.000	19.217	.05204	16.1203	468.255	10480.0	11624.9	118.519	43.99	69.53	1568
180.000	18.871	.05299	14.8253	426.786	11157.1	12322.9	122.509	44.06	70.09	1502
190.000	18.522	.05399	13.6401	388.361	11839.2	13027.0	126.315	44.21	70.74	1437
200.000	18.168	.05504	12.5519	352.714	12527.3	13738.2	129.963	44.43	71.49	1373
210.000	17.810	.05615	11.5496	319.615	13222.0	14457.3	133.471	44.71	72.34	1311
220.000	17.445	.05732	10.6236	288.875	13924.2	15185.3	136.858	45.05	73.29	1250
230.000	17.074	.05857	9.7654	260.336	14634.9	15923.4	140.139	45.45	74.35	1190
240.000	16.695	.05990	8.9678	233.874	15354.8	16672.6	143.327	45.90	75.51	1131
250.000	16.307	.06132	8.2249	209.387	16085.0	17434.2	146.436	46.42	76.80	1073
260.000	15.909	.06286	7.5315	186.797	16828.4	18211.3	149.484	47.66	78.85	1013
270.000	15.500	.06452	6.8835	166.042	17587.8	19007.2	152.487	48.29	80.36	958
280.000	15.079	.06632	6.2777	147.072	18360.1	19819.1	155.440	49.04	82.04	904
290.000	14.646	.06828	5.7116	129.844	19146.4	20648.5	158.350	49.90	83.87	851
300.000	14.199	.07043	5.1835	114.316	19947.4	21496.8	161.225	50.83	85.80	801
310.000	13.739	.07279	4.6921	100.443	20763.5	22364.8	164.072	51.82	87.82	752
320.000	13.265	.07539	4.2368	88.172	21594.7	23253.2	166.892	52.85	89.87	706
330.000	12.778	.07826	3.8173	77.440	22442.8	24164.5	169.902	55.96	93.98	657
340.000	12.280	.08143	3.4330	68.174	23319.1	25110.7	172.726	56.33	95.30	619
350.000	11.772	.08495	3.0837	60.295	24202.3	26071.1	175.510	56.98	96.81	583
360.000	11.258	.08882	2.7684	53.720	25092.7	27046.8	178.258	57.80	98.32	551
370.000	10.743	.09308	2.4862	48.371	25989.3	28037.1	180.971	58.73	99.70	522
380.000	10.233	.09773	2.2357	44.169	26889.8	29039.8	183.645	59.73	100.80	497
390.000	9.733	.10274	2.0151	41.028	27791.4	30051.7	186.274	60.77	101.51	477
400.000	9.253	.10808	1.8224	38.843	28690.7	31068.5	188.848	61.82	101.77	461
410.000	8.797	.11368	1.6552	37.487	29584.8	32085.7	191.350	62.89	101.61	448
420.000	8.371	.11947	1.5108	36.809	30471.4	33099.6	193.803	63.96	101.13	439
430.000	7.976	.12537	1.3862	36.659	31349.5	34107.7	196.175	65.04	100.46	433
440.000	7.614	.13133	1.2786	36.893	32219.3	35108.7	198.476	66.11	99.74	430
450.000	7.283	.13731	1.1853	37.393	33081.7	36102.6	200.710	67.18	99.06	428
460.000	6.979	.14328	1.1040	38.067	33938.0	37090.2	202.881	68.25	98.48	427
470.000	6.702	.14922	1.0327	38.845	34789.9	38072.7	204.994	69.31	98.04	427
480.000	6.447	.15512	.9698	39.686	35638.9	39051.5	207.054	70.37	97.74	428
490.000	6.212	.16098	.9139	40.591	36486.4	40027.9	209.068	71.43	97.56	429
500.000	5.996	.16679	.8640	41.558	37333.6	41002.9	211.037	72.49	97.47	431
520.000	5.616	.17824	.7790	43.650	39031.2	42952.5	214.861	74.58	97.54	435
540.000	5.276	.18946	.7095	45.898	40738.4	44906.5	218.548	76.65	97.90	441
560.000	4.989	.20043	.6517	48.242	42460.6	46870.1	222.118	78.69	98.50	448
580.000	4.735	.21117	.6031	50.638	44201.8	48847.6	225.588	80.71	99.28	455
600.000	4.511	.22168	.5616	53.054	45965.3	50842.3	228.969	82.69	100.22	462
620.000	4.311	.23198	.5258	55.472	47753.3	52856.9	232.272	84.64	101.27	469
640.000	4.131	.24209	.4946	57.879	49567.5	54893.6	235.505	86.56	102.41	477
660.000	3.968	.25202	.4672	60.265	51409.3	56953.8	238.675	88.44	103.62	484
680.000	3.820	.26179	.4429	62.627	53279.4	59038.8	241.787	90.29	104.89	491
700.000	3.684	.27141	.4212	64.962	55178.4	61149.5	244.846	92.11	106.19	499

Table 24. Continued.

ETHANE ISOBAR AT P = 240 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
94.142	21.818	.04583	31.1566	914.960	5413.7	6513.7	77.989	46.68	67.56	2100
100.000	21.619	.04625	29.6419	874.250	5800.4	6910.6	82.079	46.32	67.82	2063
110.000	21.281	.04699	27.1789	805.808	6461.7	7589.4	88.551	45.70	67.96	1996
120.000	20.945	.04775	24.9049	740.619	7123.6	8269.5	94.468	45.15	68.05	1926
130.000	20.608	.04852	22.8282	679.603	7786.1	8950.7	99.920	44.70	68.17	1856
140.000	20.272	.04933	20.9406	622.973	8449.4	9633.3	104.978	44.37	68.35	1786
150.000	19.936	.05016	19.2269	570.595	9114.1	10318.0	109.702	44.16	68.61	1717
160.000	19.598	.05102	17.6701	522.195	9781.1	11005.7	114.141	44.05	68.96	1648
170.000	19.259	.05192	16.2532	477.455	10451.2	11697.4	118.334	44.04	69.40	1581
180.000	18.917	.05286	14.9603	436.052	11125.3	12393.9	122.315	44.11	69.93	1516
190.000	18.573	.05384	13.7774	397.692	11804.1	13096.3	126.113	44.26	70.55	1451
200.000	18.224	.05487	12.6918	362.110	12488.5	13805.4	129.749	44.48	71.27	1389
210.000	17.871	.05596	11.6923	329.080	13179.2	14522.1	133.246	44.77	72.08	1327
220.000	17.513	.05710	10.7695	298.410	13876.9	15247.3	136.620	45.10	72.98	1267
230.000	17.149	.05831	9.9149	269.943	14582.5	15981.9	139.885	45.50	73.98	1208
240.000	16.778	.05960	9.1214	243.549	15296.8	16727.2	143.057	45.95	75.08	1150
250.000	16.400	.06098	8.3830	219.126	16020.6	17484.0	146.146	46.48	76.29	1093
260.000	16.013	.06245	7.6947	196.591	16756.7	18255.5	149.172	47.71	78.25	1035
270.000	15.617	.06403	7.0523	175.877	17508.0	19044.8	152.150	48.33	79.64	981
280.000	15.211	.06574	6.4525	156.928	18271.0	19848.9	155.074	49.09	81.19	929
290.000	14.794	.06759	5.8927	139.695	19046.9	20669.1	157.952	49.94	82.87	878
300.000	14.367	.06960	5.3709	124.126	19836.1	21506.5	160.791	50.86	84.64	828
310.000	13.929	.07179	4.8858	110.176	20639.0	22362.0	163.596	51.84	86.46	781
320.000	13.480	.07418	4.4363	97.780	21455.4	23235.8	166.370	52.86	88.30	737
330.000	13.022	.07679	4.0217	86.870	22287.1	24130.2	169.328	55.95	92.18	689
340.000	12.555	.07965	3.6413	77.371	23145.6	25057.2	172.095	56.31	93.27	652
350.000	12.081	.08277	3.2943	69.196	24009.7	25996.2	174.817	56.94	94.55	618
360.000	11.604	.08618	2.9797	62.259	24880.1	26948.3	177.499	57.75	95.88	586
370.000	11.126	.08988	2.6963	56.476	25756.4	27913.6	180.143	58.67	97.15	557
380.000	10.650	.09389	2.4424	51.766	26637.4	28890.8	182.749	59.67	98.27	532
390.000	10.184	.09820	2.2165	48.050	27521.4	29878.2	185.314	60.70	99.16	510
400.000	9.730	.10278	2.0166	45.244	28406.2	30872.9	187.832	61.77	99.75	492
410.000	9.294	.10760	1.8406	43.254	29289.6	31872.0	190.299	62.85	100.03	478
420.000	8.880	.11262	1.6863	41.973	30169.7	32872.5	192.710	63.94	100.02	467
430.000	8.491	.11777	1.5515	41.281	31045.2	33871.7	195.062	65.02	99.80	459
440.000	8.128	.12303	1.4336	41.062	31915.4	34868.0	197.352	66.11	99.44	453
450.000	7.792	.12833	1.3305	41.203	32780.5	35860.4	199.582	67.20	99.04	449
460.000	7.482	.13365	1.2401	41.608	33641.1	36848.8	201.755	68.28	98.65	447
470.000	7.196	.13897	1.1604	42.199	34498.2	37833.5	203.872	69.35	98.32	446
480.000	6.931	.14427	1.0899	42.915	35352.9	38815.4	205.940	70.42	98.08	445
490.000	6.687	.14954	1.0272	43.708	36206.4	39795.4	207.960	71.49	97.94	446
500.000	6.461	.15478	.9710	44.550	37059.8	40774.5	209.938	72.55	97.90	447
520.000	6.055	.16515	.8750	46.385	38770.1	42733.7	213.780	74.65	98.06	450
540.000	5.703	.17536	.7962	48.402	40490.1	44698.7	217.488	76.73	98.48	454
560.000	5.394	.18538	.7305	50.555	42224.9	46674.0	221.080	78.78	99.09	459
580.000	5.122	.19522	.6752	52.798	43978.1	48663.3	224.571	80.79	99.87	465
600.000	4.881	.20487	.6279	55.096	45752.8	50669.8	227.972	82.77	100.79	472
620.000	4.665	.21436	.5871	57.423	47551.2	52695.7	231.293	84.72	101.82	479
640.000	4.471	.22367	.5516	59.759	49375.1	54743.2	234.543	86.64	102.94	485
660.000	4.295	.23283	.5204	62.093	51225.8	56813.8	237.729	88.52	104.13	492
680.000	4.135	.24183	.4928	64.416	53104.2	58908.6	240.856	90.37	105.36	499
700.000	3.988	.25074	.4682	66.723	55010.9	61028.5	243.928	92.18	106.64	506

Table 24. Continued.

ETHANE ISOBAR AT P = 260 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
94.450	21.830	.04581	31.1762	920.207	5421.7	6612.7	78.068	46.71	67.64	2105
100.000	21.642	.04621	29.7476	882.030	5787.2	6988.6	81.935	46.36	67.78	2070
110.000	21.306	.04694	27.2918	814.075	6446.7	7667.0	88.402	45.75	67.92	2004
120.000	20.971	.04768	25.0229	749.191	7106.8	8346.6	94.315	45.20	68.00	1936
130.000	20.638	.04846	22.9501	688.376	7767.4	9027.2	99.762	44.75	68.11	1866
140.000	20.304	.04925	21.0654	631.883	8428.6	9709.1	104.815	44.43	68.27	1797
150.000	19.971	.05007	19.3542	579.603	9091.1	10393.0	109.534	44.21	68.52	1728
160.000	19.636	.05093	17.7995	531.280	9755.6	11079.7	113.966	44.10	68.95	1660
170.000	19.301	.05181	16.3846	486.605	10423.0	11770.1	118.152	44.09	69.27	1594
180.000	18.963	.05274	15.0938	445.264	11094.2	12465.3	122.125	44.17	69.78	1529
190.000	18.622	.05370	13.9129	406.959	11769.9	13166.1	125.914	44.32	70.38	1466
200.000	18.279	.05471	12.8295	371.436	12450.8	13873.2	129.540	44.54	71.06	1403
210.000	17.931	.05577	11.8326	338.465	13137.7	14587.6	133.026	44.82	71.83	1343
220.000	17.579	.05689	10.9126	307.856	13831.1	15310.1	136.387	45.16	72.69	1283
230.000	17.222	.05806	10.0611	279.448	14532.0	16041.7	139.639	45.55	73.64	1225
240.000	16.859	.05932	9.2712	253.111	15241.0	16783.2	142.795	46.01	74.68	1168
250.000	16.489	.06065	8.5368	228.739	15959.0	17535.8	145.866	46.52	75.82	1113
260.000	16.112	.06206	7.8529	206.245	16688.6	18302.2	148.873	47.76	77.70	1056
270.000	15.728	.06358	7.2152	185.558	17432.5	19085.6	151.829	48.38	79.00	1003
280.000	15.335	.06521	6.6204	166.617	18187.3	19882.8	154.728	49.13	80.45	952
290.000	14.933	.06697	6.0658	149.366	18953.9	20695.0	157.578	49.97	82.01	902
300.000	14.522	.06886	5.5492	133.752	19732.9	21523.2	160.385	50.89	83.64	855
310.000	14.103	.07091	5.0691	119.718	20524.4	22368.0	163.155	51.86	85.31	809
320.000	13.676	.07312	4.6242	107.199	21328.3	23229.5	165.890	52.87	87.00	765
330.000	13.241	.07552	4.2135	96.125	22146.5	24110.1	168.806	55.95	90.72	719
340.000	12.799	.07813	3.8361	86.415	22990.3	25021.6	171.526	56.30	91.64	683
350.000	12.354	.08095	3.4908	77.983	23838.8	25943.5	174.199	56.92	92.76	650
360.000	11.905	.08400	3.1766	70.740	24693.1	26877.0	176.828	57.72	93.96	618
370.000	11.456	.08729	2.8920	64.599	25553.0	27822.5	179.419	58.63	95.13	590
380.000	11.011	.09082	2.6356	59.477	26418.0	28779.4	181.970	59.62	96.23	565
390.000	10.571	.09460	2.4056	55.297	27287.0	29746.5	184.482	60.66	97.18	542
400.000	10.142	.09860	2.2002	51.984	28158.6	30722.2	186.953	61.72	97.94	523
410.000	9.726	.10282	2.0174	49.459	29031.2	31704.5	189.378	62.81	98.48	507
420.000	9.327	.10721	1.8555	47.638	29903.4	32691.0	191.755	63.90	98.80	494
430.000	8.948	.11176	1.7122	46.432	30773.9	33679.7	194.082	65.00	98.92	484
440.000	8.590	.11641	1.5857	45.744	31641.9	34668.7	196.355	66.10	98.88	477
450.000	8.255	.12114	1.4741	45.479	32507.2	35656.9	198.576	67.20	98.75	471
460.000	7.942	.12592	1.3754	45.550	33369.7	36643.6	200.745	68.29	98.58	467
470.000	7.650	.13071	1.2879	45.876	34230.0	37628.5	202.863	69.38	98.41	465
480.000	7.380	.13551	1.2101	46.391	35088.7	38611.9	204.933	70.46	98.28	463
490.000	7.126	.14029	1.1407	47.042	35946.8	39594.2	206.959	71.53	98.21	463
500.000	6.894	.14505	1.0785	47.786	36805.0	40576.2	208.943	72.60	98.21	463
520.000	6.473	.15449	.9719	49.431	38525.3	42542.0	212.798	74.71	98.43	465
540.000	6.104	.16381	.8840	51.238	40255.7	44514.9	216.521	76.79	98.90	468
560.000	5.780	.17301	.8106	53.196	42000.8	46499.0	220.128	78.84	99.55	472
580.000	5.493	.18206	.7485	55.272	43764.2	48497.7	223.635	80.86	100.35	477
600.000	5.237	.19096	.6955	57.432	45548.7	50513.7	227.052	82.84	101.27	483
620.000	5.007	.19972	.6497	59.647	47356.4	52549.2	230.390	84.79	102.30	489
640.000	4.800	.20834	.6098	61.894	49189.1	54606.0	233.655	86.71	103.40	495
660.000	4.612	.21683	.5748	64.157	51047.9	56685.5	236.854	88.59	104.57	501
680.000	4.441	.22519	.5438	66.424	52934.0	58789.0	239.994	90.44	105.79	508
700.000	4.284	.23344	.5162	68.687	54847.8	60917.2	243.078	92.25	107.04	514

Table 24. Continued.

ETHANE ISOBAR AT P = 280 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
94.756	21.841	.04579	31.1964	925.436	5429.7	6711.7	78.146	46.73	67.62	2110
100.000	21.665	.04616	29.8527	889.751	5774.2	7066.6	81.791	46.41	67.75	2078
110.000	21.330	.04688	27.4041	822.301	6432.0	7744.7	88.255	45.79	67.87	2013
120.000	20.998	.04762	25.1401	757.720	7090.3	8423.8	94.164	45.25	67.95	1945
130.000	20.667	.04839	23.0710	697.109	7748.9	9103.8	99.607	44.80	68.05	1876
140.000	20.336	.04917	21.1892	640.752	8408.1	9785.0	104.654	44.48	68.20	1807
150.000	20.005	.04999	19.4803	588.569	9068.4	10468.1	109.367	44.26	68.43	1739
160.000	19.674	.05083	17.9276	540.320	9730.6	11153.8	113.793	44.16	68.75	1672
170.000	19.341	.05170	16.5145	495.705	10395.5	11843.2	117.972	44.14	69.15	1606
180.000	19.007	.05261	15.2255	454.418	11063.9	12537.0	121.938	44.22	69.64	1542
190.000	18.671	.05356	14.0466	416.165	11736.5	13236.2	125.718	44.37	70.21	1479
200.000	18.332	.05455	12.9652	380.694	12414.2	13941.5	129.336	44.59	70.87	1418
210.000	17.990	.05559	11.9705	347.775	13097.4	14653.8	132.811	44.87	71.61	1358
220.000	17.643	.05668	11.0530	317.217	13786.8	15373.8	136.161	45.21	72.43	1300
230.000	17.293	.05783	10.2044	288.859	14483.3	16102.5	139.400	45.60	73.33	1242
240.000	16.937	.05904	9.4176	262.568	15187.5	16840.7	142.541	46.05	74.32	1187
250.000	16.575	.06033	8.6866	238.235	15900.0	17589.3	145.596	46.57	75.40	1132
260.000	16.207	.06170	8.0065	215.771	16623.5	18351.2	148.585	47.80	77.21	1076
270.000	15.833	.06316	7.3728	195.099	17360.8	19129.2	151.521	48.42	78.43	1025
280.000	15.451	.06472	6.7823	176.155	18108.1	19920.3	154.398	49.17	79.79	975
290.000	15.063	.06639	6.2320	158.878	18866.6	20725.5	157.223	50.01	81.25	926
300.000	14.667	.06818	5.7197	143.211	19636.5	21545.6	160.003	50.92	82.78	879
310.000	14.264	.07011	5.2437	129.092	20418.2	22381.2	162.743	51.89	84.34	835
320.000	13.855	.07218	4.8025	116.455	21211.4	23232.4	165.445	52.89	85.90	793
330.000	13.440	.07441	4.3948	105.226	22018.0	24101.4	168.325	55.96	89.50	748
340.000	13.020	.07681	4.0195	95.323	22849.5	25000.1	171.008	56.30	90.29	713
350.000	12.597	.07939	3.6755	86.661	23685.1	25907.9	173.639	56.91	91.30	679
360.000	12.172	.08216	3.3615	79.150	24526.0	26826.3	176.226	57.70	92.39	649
370.000	11.748	.08512	3.0759	72.702	25372.3	27755.7	178.772	58.61	93.49	621
380.000	11.327	.08829	2.8173	67.235	26224.0	28696.0	181.280	59.59	94.55	595
390.000	10.911	.09165	2.5840	62.669	27080.2	29646.4	183.749	60.62	95.52	573
400.000	10.503	.09521	2.3742	58.934	27940.1	30606.0	186.178	61.69	96.37	553
410.000	10.106	.09895	2.1860	55.958	28802.6	31573.2	188.566	62.78	97.06	536
420.000	9.723	.10285	2.0178	53.672	29666.7	32546.6	190.912	63.88	97.58	522
430.000	9.355	.10690	1.8677	52.000	30531.2	33524.3	193.212	64.98	97.95	510
440.000	9.005	.11105	1.7340	50.867	31395.5	34504.9	195.467	66.09	98.17	501
450.000	8.673	.11530	1.6150	50.193	32258.9	35487.2	197.674	67.20	98.28	494
460.000	8.361	.11960	1.5089	49.902	33121.5	36470.2	199.835	68.30	98.32	488
470.000	8.068	.12394	1.4144	49.919	33983.1	37453.4	201.949	69.39	98.32	484
480.000	7.794	.12830	1.3299	50.181	34844.3	38436.7	204.019	70.48	98.33	482
490.000	7.538	.13266	1.2542	50.630	35705.5	39420.0	206.047	71.56	98.35	481
500.000	7.299	.13701	1.1861	51.219	36567.4	40403.8	208.034	72.64	98.42	480
520.000	6.865	.14567	1.0691	52.674	38295.8	42374.5	211.899	74.76	98.70	480
540.000	6.484	.15423	.9724	54.325	40034.6	44353.2	215.633	76.85	99.21	482
560.000	6.146	.16270	.8914	56.109	41788.3	46343.9	219.253	78.90	99.90	486
580.000	5.846	.17105	.8228	58.020	43560.3	48349.9	222.772	80.92	100.73	490
600.000	5.577	.17930	.7640	60.034	45353.3	50373.5	226.202	82.91	101.66	494
620.000	5.336	.18742	.7133	62.124	47169.2	52416.9	229.552	84.86	102.69	500
640.000	5.117	.19543	.6690	64.267	49009.7	54481.6	232.830	86.77	103.79	505
660.000	4.918	.20332	.6301	66.445	50875.9	56569.0	236.041	88.65	104.95	511
680.000	4.737	.21111	.5956	68.642	52769.0	58680.0	239.192	90.50	106.16	517
700.000	4.571	.21879	.5649	70.848	54689.4	60815.6	242.288	92.31	107.40	523

Table 24. Continued.

ETHANE ISOBAR AT P = 300 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
95.062	21.852	.04575	31.2173	930.663	5437.7	6810.5	78.222	46.76	67.60	2115
100.000	21.687	.04611	29.9573	897.416	5761.3	7144.6	81.649	46.46	67.72	2085
110.000	21.355	.04683	27.5156	830.467	6417.5	7822.3	88.109	45.84	67.83	2021
120.000	21.024	.04756	25.2566	766.208	7074.1	8501.0	94.014	45.30	67.90	1954
130.000	20.695	.04832	23.1911	705.801	7730.8	9180.4	99.452	44.86	67.99	1886
140.000	20.367	.04910	21.3121	649.580	8388.0	9861.0	104.495	44.53	68.13	1817
150.000	20.039	.04990	19.6054	597.493	9046.2	10543.3	109.203	44.32	68.35	1750
160.000	19.710	.05073	18.0545	549.315	9706.1	11228.1	113.623	44.21	68.65	1684
170.000	19.381	.05160	16.6431	504.757	10368.5	11916.4	117.796	44.20	69.03	1619
180.000	19.051	.05249	15.3558	463.520	11034.2	12609.0	121.754	44.27	69.50	1555
190.000	18.718	.05342	14.1786	425.318	11704.0	13306.7	125.526	44.42	70.05	1493
200.000	18.384	.05440	13.0990	389.887	12378.5	14010.3	129.135	44.64	70.68	1432
210.000	18.046	.05541	12.1063	357.013	13058.2	14720.6	132.600	44.92	71.39	1373
220.000	17.705	.05648	11.1910	326.498	13743.9	15438.3	135.939	45.26	72.18	1315
230.000	17.361	.05760	10.3448	298.181	14436.2	16164.3	139.166	45.65	73.04	1259
240.000	17.011	.05878	9.5607	271.927	15135.8	16899.3	142.295	46.10	73.98	1204
250.000	16.657	.06003	8.8328	247.624	15843.3	17644.3	145.335	46.62	75.01	1151
260.000	16.298	.06136	8.1559	225.179	16561.3	18402.0	148.307	47.85	76.76	1096
270.000	15.933	.06276	7.5257	204.513	17292.4	19175.3	151.225	48.47	77.92	1045
280.000	15.562	.06426	6.9387	185.558	18033.1	19960.9	154.082	49.21	79.21	996
290.000	15.185	.06585	6.3921	168.248	18784.2	20759.8	156.886	50.05	80.59	949
300.000	14.802	.06756	5.8833	152.523	19546.1	21572.9	159.642	50.95	82.03	903
310.000	14.414	.06938	5.4107	138.319	20319.1	22400.5	162.355	51.91	83.50	860
320.000	14.020	.07133	4.9724	125.565	21103.0	23242.8	165.029	52.91	84.96	818
330.000	13.622	.07341	4.5671	114.189	21899.6	24101.9	167.879	55.98	88.46	774
340.000	13.220	.07564	4.1935	104.107	22720.5	24989.8	170.529	56.30	89.16	740
350.000	12.817	.07802	3.8504	95.236	23545.1	25885.8	173.126	56.91	90.08	708
360.000	12.412	.08055	3.5363	87.485	24374.7	26791.6	175.678	57.69	91.09	677
370.000	12.009	.08327	3.2498	80.767	25209.6	27707.8	178.188	58.59	92.14	649
380.000	11.608	.08619	2.9893	75.000	26049.9	28634.3	180.659	59.57	93.16	624
390.000	11.212	.08919	2.7531	70.106	26895.2	29570.8	183.091	60.59	94.13	601
400.000	10.824	.09239	2.5396	66.012	27744.9	30516.6	185.486	61.66	95.02	581
410.000	10.444	.09575	2.3470	62.654	28598.2	31470.8	187.842	62.75	95.80	564
420.000	10.075	.09926	2.1736	59.965	29454.5	32432.1	190.158	63.85	96.45	548
430.000	9.719	.10289	2.0178	57.884	30312.7	33399.4	192.434	64.96	96.98	536
440.000	9.378	.10663	1.8780	56.345	31172.4	34371.3	194.669	66.08	97.39	525
450.000	9.053	.11046	1.7526	55.292	32033.0	35346.8	196.861	67.19	97.70	517
460.000	8.744	.11436	1.6401	54.629	32894.2	36324.9	199.011	68.30	97.92	510
470.000	8.453	.11831	1.5392	54.322	33755.8	37305.0	201.118	69.40	98.09	505
480.000	8.178	.12229	1.4486	54.301	34618.0	38286.6	203.185	70.49	98.23	501
490.000	7.919	.12628	1.3670	54.511	35481.2	39269.6	205.212	71.58	98.37	499
500.000	7.676	.13028	1.2934	54.903	36345.6	40254.0	207.200	72.66	98.52	497
520.000	7.233	.13828	1.1663	56.077	38080.2	42228.0	211.071	74.80	98.91	496
540.000	6.841	.14617	1.0610	57.575	39826.1	44211.2	214.814	76.89	99.45	497
560.000	6.493	.15400	.9727	59.229	41587.0	46207.1	218.443	78.95	100.17	499
580.000	6.182	.16175	.8976	60.994	43366.3	48218.8	221.973	80.98	101.02	503
600.000	5.903	.16941	.8333	62.867	45166.5	50248.6	225.413	82.96	101.98	506
620.000	5.651	.17696	.7775	64.829	46989.5	52298.5	228.774	84.91	103.02	511
640.000	5.422	.18443	.7289	66.860	48836.9	54369.8	232.062	86.83	104.13	516
660.000	5.214	.19180	.6861	68.942	50709.9	56463.8	235.284	88.71	105.29	521
680.000	5.023	.19907	.6482	71.059	52609.3	58581.5	238.445	90.56	106.49	527
700.000	4.848	.20626	.6144	73.197	54535.8	60723.5	241.549	92.36	107.72	532

Table 24. Continued.

ETHANE ISOBAR AT P = 320 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
95.367	21.864	.04574	31.2387	935.879	5445.6	6909.3	78.298	46.78	67.59	2120
100.000	21.709	.04606	30.0614	905.021	5748.6	7222.6	81.507	46.50	67.69	2093
110.000	21.379	.04678	27.6265	838.591	6403.2	7900.0	87.965	45.89	67.79	2029
120.000	21.050	.04751	25.3724	774.653	7058.1	8578.3	93.866	45.35	67.85	1963
130.000	20.723	.04825	23.3103	714.453	7713.0	9257.2	99.300	44.91	67.93	1895
140.000	20.397	.04903	21.4340	658.369	8368.3	9937.1	104.338	44.58	68.06	1828
150.000	20.072	.04982	19.7293	606.376	9024.4	10618.6	109.040	44.37	68.27	1761
160.000	19.746	.05064	18.1802	558.267	9682.1	11302.6	113.455	44.26	68.55	1695
170.000	19.420	.05149	16.7704	513.763	10342.1	11989.9	117.621	44.25	68.92	1631
180.000	19.093	.05237	15.4846	472.571	11005.3	12681.2	121.573	44.32	69.37	1568
190.000	18.765	.05329	14.3089	434.410	11672.3	13377.6	125.338	44.47	69.90	1506
200.000	18.435	.05425	13.2309	399.020	12343.7	14079.6	128.938	44.69	70.51	1446
210.000	18.102	.05524	12.2400	366.183	13020.2	14788.0	132.394	44.97	71.19	1388
220.000	17.766	.05629	11.3266	335.705	13702.3	15503.5	135.723	45.31	71.94	1331
230.000	17.427	.05738	10.4826	307.421	14390.7	16227.0	138.939	45.70	72.77	1275
240.000	17.084	.05854	9.7009	281.195	15086.(	16959.1	142.055	46.15	73.67	1221
250.000	16.737	.05975	8.9756	256.914	15788.8	17700.8	145.082	46.67	74.65	1169
260.000	16.385	.06103	8.3014	234.480	16501.7	18454.7	148.039	47.89	76.36	1114
270.000	16.028	.06239	7.6742	213.812	17227.2	19223.7	150.941	48.51	77.46	1065
280.000	15.667	.06383	7.0903	194.838	17961.6	20004.3	153.780	49.25	78.68	1017
290.000	15.301	.06536	6.5467	177.490	18706.2	20797.6	156.563	50.08	80.00	970
300.000	14.929	.06698	6.0409	161.704	19460.9	21604.4	159.298	50.99	81.36	926
310.000	14.554	.06871	5.5710	147.412	20226.2	22424.9	161.989	51.94	82.76	883
320.000	14.174	.07055	5.1351	134.546	21001.8	23259.5	164.638	52.93	84.15	843
330.000	13.791	.07251	4.7317	123.028	21789.7	24110.1	167.461	55.99	87.57	799
340.000	13.405	.07460	4.3594	112.780	22601.5	24988.6	170.084	56.31	88.20	766
350.000	13.018	.07682	4.0168	103.714	23416.5	25874.7	172.652	56.92	89.05	734
360.000	12.631	.07917	3.7026	95.745	24236.3	26769.8	175.174	57.69	90.00	704
370.000	12.245	.08167	3.4151	88.786	25061.5	27674.8	177.653	58.58	91.00	677
380.000	11.862	.08432	3.1528	82.753	25892.0	28589.7	180.093	59.55	91.99	652
390.000	11.484	.08708	2.9142	77.571	26727.9	29514.5	182.495	60.58	92.95	629
400.000	11.111	.09000	2.6974	73.167	27568.6	30448.6	184.860	61.64	93.86	608
410.000	10.747	.09305	2.5010	69.477	28413.7	31391.3	187.188	62.73	94.69	590
420.000	10.392	.09623	2.3232	66.440	29262.6	32342.0	189.478	63.83	95.43	574
430.000	10.048	.09952	2.1626	63.998	30114.8	33299.5	191.731	64.95	96.07	561
440.000	9.716	.10292	2.0175	62.095	30969.6	34263.0	193.946	66.06	96.61	549
450.000	9.398	.10640	1.8866	60.674	31826.7	35231.5	196.123	67.18	97.07	539
460.000	9.095	.10995	1.7686	59.676	32685.6	36204.1	198.260	68.30	97.44	532
470.000	8.806	.11356	1.6620	59.051	33546.1	37180.1	200.359	69.40	97.76	525
480.000	8.532	.11721	1.5658	58.738	34408.4	38159.0	202.420	70.50	98.03	521
490.000	8.273	.12088	1.4788	58.689	35272.3	39140.5	204.444	71.60	98.28	517
500.000	8.028	.12457	1.4000	58.857	36138.3	40124.5	206.432	72.68	98.52	515
520.000	7.579	.13195	1.2634	59.685	37877.5	42099.9	210.306	74.82	99.04	512
540.000	7.179	.13930	1.1498	60.957	39629.1	44086.6	214.055	76.93	99.65	512
560.000	6.822	.14658	1.0542	62.486	41396.1	46086.8	217.692	78.99	100.39	513
580.000	6.502	.15380	.9728	64.141	43181.6	48103.1	221.230	81.02	101.26	516
600.000	6.214	.16093	.9029	65.890	44988.1	50137.9	224.679	83.01	102.24	519
620.000	5.953	.16799	.8423	67.730	46817.3	52193.0	228.048	84.96	103.29	523
640.000	5.715	.17497	.7893	69.649	48670.9	54269.9	231.345	86.88	104.41	527
660.000	5.498	.18187	.7427	71.631	50549.8	56369.6	234.575	88.76	105.57	532
680.000	5.300	.18869	.7013	73.660	52454.9	58492.9	237.745	90.61	106.77	537
700.000	5.117	.19543	.6645	75.723	54386.9	60640.6	240.857	92.42	108.01	542

Table 24. Continued.

ETHANE ISOBAR AT P = 350 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
95.821	21.880	.04570	31.2719	943.684	5457.6	7057.2	78.411	46.82	67.56	2128
100.000	21.742	.04599	30.2166	916.312	5729.9	7339.7	81.297	46.57	67.65	2103
110.000	21.414	.04670	27.7918	850.688	6382.1	8016.6	87.750	45.96	67.74	2041
120.000	21.089	.04742	25.5446	787.243	7034.5	8694.2	93.646	45.42	67.78	1976
130.000	20.765	.04816	23.4877	727.360	7686.8	9372.4	99.073	44.98	67.85	1910
140.000	20.442	.04892	21.6150	671.480	8339.3	10051.4	104.105	44.65	67.96	1843
150.000	20.121	.04970	19.9133	619.627	8992.4	10731.9	108.800	44.44	68.15	1777
160.000	19.800	.05051	18.3667	571.618	9646.9	11414.6	113.207	44.33	68.42	1712
170.000	19.478	.05134	16.9590	527.190	10303.5	12100.4	117.364	44.32	68.76	1649
180.000	19.156	.05220	15.6751	486.059	10963.0	12790.1	121.306	44.39	69.19	1587
190.000	18.833	.05310	14.5014	447.951	11626.0	13484.5	125.060	44.54	69.69	1526
200.000	18.508	.05403	13.4256	412.614	12293.2	14184.2	128.649	44.76	70.26	1467
210.000	18.182	.05500	12.4369	379.820	12965.1	14890.0	132.093	45.04	70.91	1410
220.000	17.853	.05601	11.5260	349.384	13642.2	15602.6	135.408	45.38	71.62	1354
230.000	17.522	.05707	10.6847	321.137	14325.1	16322.5	138.608	45.77	72.40	1299
240.000	17.188	.05818	9.9061	294.941	15014.4	17050.8	141.707	46.22	73.25	1246
250.000	16.850	.05935	9.1840	270.678	15710.8	17787.9	144.716	46.73	74.17	1195
260.000	16.509	.06057	8.5133	248.247	16416.6	18536.7	147.653	47.96	75.81	1142
270.000	16.164	.06186	7.8897	227.564	17134.5	19299.8	150.533	48.57	76.84	1094
280.000	15.816	.06323	7.3095	208.551	17860.8	20073.8	153.347	49.31	77.99	1047
290.000	15.463	.06467	6.7696	191.137	18596.4	20859.8	156.105	50.14	79.22	1002
300.000	15.108	.06619	6.2674	175.254	19341.6	21658.3	158.812	51.04	80.50	958
310.000	14.748	.06780	5.8007	160.832	20096.7	22469.8	161.473	51.99	81.80	917
320.000	14.386	.06951	5.3675	147.801	20861.5	23294.4	164.091	52.97	83.11	878
330.000	14.022	.07131	4.9662	136.083	21638.1	24134.1	166.880	56.02	86.44	835
340.000	13.657	.07322	4.5953	125.600	22438.1	25000.9	169.468	56.33	86.98	803
350.000	13.291	.07524	4.2532	116.267	23241.1	25874.5	172.000	56.93	87.75	772
360.000	12.926	.07737	3.9384	108.001	24048.5	26756.4	174.484	57.70	88.64	742
370.000	12.562	.07961	3.6494	100.717	24861.2	27647.4	176.925	58.58	89.58	715
380.000	12.201	.08196	3.3847	94.333	25679.5	28548.0	179.327	59.54	90.54	690
390.000	11.845	.08443	3.1427	88.774	26503.3	29458.2	181.691	60.56	91.49	667
400.000	11.494	.08700	2.9218	83.969	27332.5	30377.7	184.019	61.62	92.41	647
410.000	11.149	.08969	2.7205	79.854	28166.9	31306.1	186.311	62.71	93.28	628
420.000	10.813	.09248	2.5371	76.372	29006.0	32243.0	188.569	63.81	94.09	611
430.000	10.485	.09537	2.3703	73.468	29849.6	33187.6	190.792	64.93	94.84	597
440.000	10.168	.09835	2.2186	71.092	30697.2	34139.5	192.980	66.05	95.52	584
450.000	9.861	.10141	2.0807	69.195	31548.5	35097.7	195.133	67.17	96.13	573
460.000	9.567	.10453	1.9555	67.731	32403.1	36061.7	197.252	68.29	96.67	564
470.000	9.284	.10771	1.8416	66.652	33260.9	37030.8	199.336	69.41	97.15	557
480.000	9.014	.11094	1.7381	65.913	34121.7	38004.5	201.386	70.51	97.59	550
490.000	8.757	.11420	1.6439	65.470	34985.5	38982.4	203.403	71.61	97.99	545
500.000	8.512	.11748	1.5580	65.282	35852.3	39964.2	205.386	72.70	98.37	541
520.000	8.059	.12409	1.4082	65.519	37595.5	41938.8	209.258	74.86	99.09	537
540.000	7.651	.13071	1.2826	66.356	39353.3	43928.0	213.012	76.97	99.84	535
560.000	7.284	.13729	1.1764	67.589	41127.7	45932.9	216.658	79.05	100.66	535
580.000	6.953	.14383	1.0858	69.068	42921.0	47954.9	220.205	81.08	101.56	536
600.000	6.653	.15030	1.0078	70.684	44735.4	49995.8	223.665	83.07	102.55	538
620.000	6.381	.15671	.9400	72.375	46572.6	52057.4	227.045	85.03	103.62	541
640.000	6.133	.16306	.8806	74.140	48434.0	54140.9	230.352	86.95	104.75	545
660.000	5.905	.16934	.8283	75.975	50320.6	56247.5	233.593	88.83	105.92	548
680.000	5.696	.17556	.7819	77.869	52233.3	58378.0	236.773	90.68	107.13	553
700.000	5.503	.18172	.7404	79.810	54172.7	60532.9	239.896	92.49	108.37	557

Table 24. Continued.

ETHANE ISOBAR AT P = 400 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
96.574	21.908	.04565	31.3298	956.639	5477.5	7303.3	78.596	46.88	67.52	2140
100.000	21.796	.04588	30.4731	934.839	5699.6	7534.8	80.951	46.67	67.58	2121
110.000	21.472	.04657	28.0644	870.611	6348.1	8210.9	87.397	46.07	67.66	2061
120.000	21.151	.04728	25.8284	808.018	6996.5	8887.6	93.285	45.53	67.68	1998
130.000	20.833	.04800	23.7793	748.671	7644.6	9564.7	98.703	45.10	67.72	1933
140.000	20.516	.04874	21.9125	693.142	8292.6	10242.3	103.725	44.77	67.81	1868
150.000	20.200	.04950	20.2152	641.521	8941.0	10921.2	108.409	44.56	67.98	1804
160.000	19.885	.05029	18.6720	593.671	9590.5	11602.0	112.803	44.45	68.21	1740
170.000	19.571	.05110	17.2673	549.357	10241.8	12285.6	116.947	44.44	68.53	1678
180.000	19.257	.05193	15.9861	508.312	10895.5	12972.7	120.875	44.51	68.91	1617
190.000	18.942	.05279	14.8150	470.274	11552.5	13664.2	124.613	44.66	69.37	1558
200.000	18.626	.05369	13.7419	434.996	12213.0	14360.5	128.184	44.88	69.90	1501
210.000	18.310	.05461	12.7562	402.258	12877.8	15062.4	131.609	45.15	70.49	1445
220.000	17.992	.05558	11.8484	371.863	13547.3	15770.5	134.903	45.49	71.15	1390
230.000	17.673	.05658	11.0106	343.649	14222.1	16485.4	138.081	45.88	71.86	1337
240.000	17.351	.05763	10.2357	317.473	14902.6	17207.9	141.156	46.33	72.64	1286
250.000	17.028	.05873	9.5176	293.211	15589.4	17938.5	144.138	46.84	73.48	1236
260.000	16.702	.05987	8.8512	270.759	16285.0	18679.9	147.046	48.06	75.03	1185
270.000	16.374	.06107	8.2321	250.024	16991.9	19434.8	149.895	48.67	75.97	1139
280.000	16.044	.06233	7.6563	230.925	17706.5	20199.7	152.676	49.40	77.02	1094
290.000	15.711	.06365	7.1208	213.387	18429.4	20975.5	155.398	50.23	78.15	1050
300.000	15.376	.06504	6.6227	197.334	19161.4	21762.8	158.067	51.12	79.32	1009
310.000	15.040	.06649	6.1595	182.696	19902.4	22562.0	160.688	52.06	80.52	969
320.000	14.702	.06802	5.7293	169.400	20652.5	23373.2	163.263	53.04	81.72	931
330.000	14.364	.06962	5.3301	157.372	21413.8	24198.6	166.009	56.08	84.96	890
340.000	14.025	.07130	4.9602	146.531	22198.1	25050.1	168.550	56.38	85.40	859
350.000	13.687	.07306	4.6180	136.800	22984.9	25907.4	171.035	56.97	86.09	829
360.000	13.350	.07491	4.3019	128.097	23776.1	26772.3	173.472	57.72	86.90	800
370.000	13.015	.07683	4.0104	120.343	24572.4	27645.7	175.865	58.59	87.79	774
380.000	12.684	.07884	3.7421	113.459	25374.5	28528.1	178.218	59.55	88.70	749
390.000	12.356	.08093	3.4952	107.373	26182.4	29419.7	180.534	60.56	89.62	726
400.000	12.033	.08310	3.2685	102.015	26996.3	30320.5	182.814	61.61	90.54	706
410.000	11.716	.08536	3.0603	97.323	27816.2	31230.4	185.061	62.70	91.44	687
420.000	11.404	.08769	2.8694	93.240	28641.8	32149.2	187.275	63.80	92.31	669
430.000	11.100	.09009	2.6942	89.715	29473.1	33076.6	189.457	64.92	93.15	654
440.000	10.804	.09256	2.5337	86.701	30309.8	34012.1	191.608	66.04	93.95	640
450.000	10.516	.09509	2.3865	84.155	31151.7	34955.4	193.727	67.16	94.70	628
460.000	10.237	.09768	2.2515	82.037	31998.6	35906.0	195.817	68.29	95.41	617
470.000	9.967	.10033	2.1278	80.310	32850.3	36863.5	197.876	69.41	96.08	608
480.000	9.707	.10302	2.0142	78.937	33706.7	37827.4	199.905	70.52	96.71	599
490.000	9.457	.10574	1.9100	77.885	34567.7	38797.4	201.905	71.63	97.30	593
500.000	9.217	.10850	1.8143	77.118	35433.2	39773.1	203.877	72.73	97.85	587
520.000	8.766	.11405	1.6453	76.318	37177.7	41740.8	207.735	74.90	98.90	578
540.000	8.354	.11971	1.5018	76.302	38940.6	43728.8	211.486	77.03	99.90	573
560.000	7.978	.12535	1.3793	76.869	40722.7	45736.7	215.137	79.11	100.89	570
580.000	7.635	.13098	1.2740	77.854	42525.4	47764.5	218.695	81.16	101.90	570
600.000	7.322	.13657	1.1829	79.129	44349.9	49812.9	222.167	83.16	102.95	570
620.000	7.036	.14213	1.1035	80.596	46197.6	51882.7	225.561	85.12	104.04	572
640.000	6.773	.14763	1.0338	82.184	48069.4	53974.8	228.882	87.04	105.18	574
660.000	6.532	.15309	.9722	83.834	49966.5	56090.3	232.137	88.93	106.37	577
680.000	6.309	.15851	.9174	85.533	51889.5	58229.7	235.330	90.78	107.59	580
700.000	6.102	.16387	.8684	87.285	53838.9	60393.9	238.467	92.59	108.83	584

Table 24. Continued.

ETHANE ISOBAR AT P = 450 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
97.319	21.936	.04559	31.3911	969.523	5497.[illegible]	7548.9	78.776	46.93	67.49	2153
100.000	21.849	.04577	30.7270	952.984	5670.3	7729.9	80.611	46.78	67.53	2139
110.000	21.529	.04645	28.3338	890.237	6315.2	8405.4	87.050	46.18	67.58	2081
120.000	21.212	.04714	26.1081	828.536	6959.8	9081.2	92.931	45.65	67.59	2019
130.000	20.898	.04785	24.0664	769.748	7604.0	9757.2	98.341	45.21	67.61	1956
140.000	20.587	.04857	22.2048	714.579	8247.8	10433.6	103.354	44.89	67.68	1892
150.000	20.277	.04932	20.5113	663.187	8891.8	11111.1	108.028	44.67	67.82	1829
160.000	19.968	.05008	18.9710	615.489	9536.6	11790.2	112.411	44.57	68.03	1767
170.000	19.660	.05086	17.5686	571.277	10182.9	12471.8	116.543	44.55	68.31	1706
180.000	19.353	.05167	16.2895	530.303	10831.5	13156.7	120.458	44.62	68.67	1647
190.000	19.046	.05250	15.1203	492.315	11482.8	13845.5	124.182	44.77	69.10	1589
200.000	18.739	.05337	14.0491	457.074	12137.4	14538.9	127.738	44.99	69.58	1533
210.000	18.431	.05426	13.0654	424.361	12795.9	15237.4	131.146	45.26	70.13	1478
220.000	18.123	.05518	12.1598	393.985	13458.6	15941.6	134.422	45.60	70.74	1425
230.000	17.814	.05614	11.3243	365.777	14126.0	16652.2	137.581	45.99	71.40	1374
240.000	17.504	.05713	10.5519	339.592	14798.8	17369.8	140.635	46.43	72.12	1324
250.000	17.192	.05817	9.8365	315.301	15477.4	18094.9	143.594	46.94	72.90	1276
260.000	16.880	.05924	9.1729	292.801	16164.2	18830.2	146.479	48.16	74.38	1226
270.000	16.566	.06037	8.5566	271.994	16861.8	19578.3	149.302	48.77	75.25	1181
280.000	16.250	.06154	7.9837	252.790	17566.5	20335.6	152.056	49.50	76.23	1137
290.000	15.934	.06276	7.4509	235.112	18279.0	21103.2	154.749	50.32	77.29	1095
300.000	15.617	.06403	6.9552	218.884	19000.0	21881.5	157.388	51.20	78.39	1055
310.000	15.299	.06537	6.4941	204.034	19729.6	22671.1	159.976	52.14	79.52	1017
320.000	14.980	.06675	6.0653	190.486	20467.9	23471.9	162.519	53.11	80.65	980
330.000	14.662	.06820	5.6670	178.168	21217.0	24286.2	165.230	56.14	83.81	940
340.000	14.344	.06971	5.2971	167.003	21988.8	25125.9	167.737	56.44	84.20	910
350.000	14.028	.07129	4.9542	156.915	22763.0	25970.9	170.186	57.01	84.83	881
360.000	13.713	.07292	4.6364	147.827	23541.4	26823.0	172.586	57.76	85.60	853
370.000	13.401	.07462	4.3424	139.665	24325.1	27683.1	174.943	58.63	86.44	827
380.000	13.091	.07639	4.0706	132.351	25114.6	28552.0	177.260	59.57	87.33	803
390.000	12.786	.07821	3.8195	125.818	25910.2	29429.8	179.540	60.58	88.24	780
400.000	12.484	.08010	3.5877	119.999	26712.3	30316.7	181.785	61.63	89.16	759
410.000	12.188	.08205	3.3739	114.832	27520.7	31212.8	183.998	62.71	90.07	740
420.000	11.897	.08405	3.1767	110.262	28335.5	32118.0	186.179	63.81	90.96	723
430.000	11.612	.08612	2.9948	106.237	29156.7	33032.0	188.330	64.92	91.84	706
440.000	11.333	.08824	2.8271	102.713	29984.1	33954.7	190.451	66.04	92.70	692
450.000	11.062	.09040	2.6724	99.648	30817.7	34885.8	192.543	67.17	93.53	679
460.000	10.797	.09262	2.5297	97.004	31657.3	35825.1	194.608	68.29	94.33	667
470.000	10.540	.09488	2.3980	94.748	32502.8	36772.2	196.645	69.42	95.09	656
480.000	10.291	.09717	2.2764	92.848	33354.0	37726.8	198.654	70.54	95.83	647
490.000	10.050	.09950	2.1640	91.273	34211.0	38688.7	200.638	71.65	96.54	639
500.000	9.817	.10187	2.0602	89.995	35073.5	39657.5	202.595	72.75	97.22	632
520.000	9.375	.10666	1.8752	88.225	36815.1	41614.9	206.433	74.93	98.51	621
540.000	8.966	.11153	1.7163	87.338	38578.5	43597.3	210.174	77.07	99.72	613
560.000	8.589	.11643	1.5793	87.153	40364.1	45603.4	213.822	79.16	100.89	607
580.000	8.241	.12136	1.4607	87.516	42172.1	47632.7	217.382	81.22	102.04	604
600.000	7.920	.12626	1.3574	88.293	44003.3	49684.8	220.861	83.23	103.18	603
620.000	7.625	.13114	1.2669	89.376	45858.5	51760.0	224.263	85.19	104.34	603
640.000	7.353	.13600	1.1871	90.681	47738.4	53858.6	227.594	87.12	105.52	604
660.000	7.101	.14083	1.1165	92.141	49643.6	55980.9	230.860	89.01	106.72	606
680.000	6.867	.14562	1.0536	93.704	51574.7	58127.4	234.064	90.86	107.94	608
700.000	6.650	.15037	.9973	95.328	53532.2	60298.6	237.210	92.67	109.19	611

Table 24. Continued.

ETHANE ISOBAR AT P = 500 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
98.058	21.963	.04553	31.4553	982.333	5517.3	7793.9	78.952	46.99	67.46	2165
100.000	21.901	.04566	30.9785	970.737	5641.9	7924.9	80.276	46.87	67.48	2155
110.000	21.584	.04633	28.5999	909.551	6283.4	8539.9	86.710	46.29	67.52	2100
120.000	21.272	.04701	26.3842	848.799	6924.5	9275.0	92.584	45.75	67.50	2040
130.000	20.963	.04770	24.3491	790.595	7564.9	9950.1	97.987	45.32	67.51	1978
140.000	20.656	.04841	22.4922	735.792	8204.8	10625.4	102.992	45.00	67.56	1916
150.000	20.351	.04914	20.8026	684.636	8844.6	11301.5	107.656	44.79	67.68	1854
160.000	20.048	.04988	19.2642	637.086	9485.1	11979.1	112.030	44.68	67.87	1793
170.000	19.746	.05064	17.8636	592.968	10126.8	12658.9	116.151	44.66	68.13	1734
180.000	19.445	.05143	16.5860	552.052	10770.5	13341.8	120.054	44.73	68.45	1676
190.000	19.145	.05223	15.4181	514.099	11416.7	14028.3	123.766	44.88	68.85	1619
200.000	18.845	.05306	14.3481	478.876	12065.9	14719.0	127.308	45.09	69.30	1564
210.000	18.546	.05392	13.3655	446.169	12718.5	15414.6	130.702	45.37	69.81	1511
220.000	18.246	.05481	12.4613	415.788	13375.1	16115.4	133.963	45.70	70.38	1459
230.000	17.946	.05572	11.6272	387.562	14036.2	16822.2	137.105	46.09	71.00	1409
240.000	17.646	.05667	10.8563	361.346	14702.1	17535.6	140.140	46.53	71.67	1360
250.000	17.346	.05765	10.1426	337.009	15373.4	18256.0	143.081	47.04	72.40	1313
260.000	17.044	.05867	9.4808	314.441	16052.6	18986.1	145.945	48.26	73.84	1264
270.000	16.742	.05973	8.8662	293.542	16742.1	19728.5	148.746	48.86	74.66	1221
280.000	16.440	.06083	8.2950	274.221	17438.3	20479.6	151.478	49.59	75.58	1178
290.000	16.138	.06197	7.7637	256.397	18142.0	21240.3	154.147	50.40	76.58	1138
300.000	15.835	.06315	7.2692	239.993	18853.7	22011.4	156.761	51.28	77.63	1099
310.000	15.532	.06438	6.8091	224.934	19573.8	22793.0	159.324	52.22	78.70	1061
320.000	15.229	.06566	6.3808	211.146	20302.3	23585.4	161.839	53.18	79.78	1026
330.000	14.928	.06699	5.9825	198.556	21041.4	24390.9	164.523	56.21	82.90	986
340.000	14.627	.06837	5.6120	187.091	21802.9	25221.3	167.002	56.50	83.25	957
350.000	14.328	.06979	5.2678	176.677	22566.9	26056.6	169.423	57.07	83.84	929
360.000	14.031	.07127	4.9482	167.241	23335.0	26898.6	171.795	57.81	84.58	902
370.000	13.736	.07280	4.6516	158.711	24108.4	27748.4	174.124	58.67	85.40	876
380.000	13.445	.07438	4.3765	151.016	24887.8	28606.7	176.412	59.61	86.27	852
390.000	13.157	.07601	4.1215	144.090	25673.6	29473.9	178.665	60.61	87.17	830
400.000	12.873	.07768	3.8853	137.868	26466.0	30350.1	180.883	61.65	88.08	809
410.000	12.593	.07941	3.6665	132.290	27265.1	31235.5	183.069	62.73	89.00	790
420.000	12.319	.08118	3.4639	127.303	28071.1	32130.0	185.225	63.82	89.91	772
430.000	12.049	.08299	3.2762	122.855	28883.9	33033.6	187.351	64.94	90.81	755
440.000	11.785	.08485	3.1024	118.903	29703.6	33946.1	189.449	66.06	91.70	740
450.000	11.528	.08675	2.9413	115.405	30530.0	34867.5	191.519	67.18	92.57	727
460.000	11.276	.08869	2.7921	112.324	31363.1	35797.4	193.563	68.31	93.42	714
470.000	11.030	.09066	2.6537	109.628	32202.8	36735.7	195.581	69.43	94.25	703
480.000	10.792	.09266	2.5253	107.286	33049.0	37682.2	197.574	70.55	95.05	693
490.000	10.560	.09470	2.4061	105.270	33901.7	38636.7	199.542	71.67	95.84	684
500.000	10.335	.09676	2.2954	103.554	34760.7	39598.8	201.486	72.77	96.59	676
520.000	9.905	.10096	2.0968	100.929	36497.5	41545.3	205.303	74.96	98.05	662
540.000	9.503	.10522	1.9247	99.234	38258.9	43520.2	209.029	77.11	99.43	652
560.000	9.129	.10954	1.7751	98.311	40044.9	45521.9	212.669	79.21	100.74	644
580.000	8.781	.11388	1.6445	98.017	41855.3	47549.6	216.226	81.27	102.02	639
600.000	8.457	.11824	1.5299	98.228	43690.5	49602.5	219.706	83.28	103.27	636
620.000	8.157	.12259	1.4291	98.838	45550.7	51680.2	223.112	85.25	104.51	634
640.000	7.878	.12693	1.3399	99.757	47436.3	53782.7	226.450	87.19	105.74	634
660.000	7.619	.13124	1.2607	100.909	49347.7	55909.9	229.723	89.08	106.98	634
680.000	7.378	.13553	1.1899	102.236	51285.3	58062.0	232.935	90.93	108.23	636
700.000	7.153	.13980	1.1263	103.689	53249.4	60239.1	236.091	92.75	109.49	638

Table 24. Continued.

ETHANE ISOBAR AT P = 550 BAR

T	DEN	VOL	DP/DT	DP/DD	E	H	S	CV	CP	W
DEG K	MOL/L	L/MOL	BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
98.790	21.991	.04547	31.5225	995.063	5537.2	8038.3	79.124	47.04	67.44	2178
100.000	21.952	.04555	31.2280	988.087	5614.5	8119.9	79.945	46.97	67.45	2172
110.000	21.639	.04621	28.8632	928.565	6252.7	8794.4	86.375	46.39	67.46	2119
120.000	21.330	.04688	26.6568	868.810	6890.4	9468.9	92.244	45.86	67.43	2061
130.000	21.025	.04756	24.6279	811.216	7527.2	10143.1	97.640	45.43	67.41	2000
140.000	20.723	.04826	22.7751	756.795	8163.4	10817.5	102.637	45.10	67.45	1939
150.000	20.423	.04896	21.0879	705.879	8799.3	11492.4	107.294	44.89	67.55	1879
160.000	20.125	.04969	19.5519	658.474	9435.7	12168.6	111.658	44.78	67.72	1819
170.000	19.829	.05043	18.1527	614.443	10073.1	12846.9	115.770	44.77	67.96	1761
180.000	19.534	.05119	16.8760	573.576	10712.3	13527.9	119.663	44.84	68.26	1704
190.000	19.240	.05197	15.7089	535.645	11353.8	14212.3	123.363	44.98	68.63	1648
200.000	18.948	.05278	14.6395	500.427	11998.0	14900.7	126.894	45.20	69.05	1594
210.000	18.655	.05360	13.6576	467.710	12645.4	15593.6	130.275	45.47	69.54	1542
220.000	18.363	.05446	12.7540	437.306	13296.5	16291.5	133.521	45.80	70.07	1491
230.000	18.072	.05533	11.9206	409.046	13951.6	16995.0	136.649	46.19	70.65	1442
240.000	17.781	.05624	11.1505	382.781	14611.5	17704.7	139.669	46.63	71.29	1395
250.000	17.489	.05718	10.4377	358.381	15276.3	18421.1	142.593	47.13	71.98	1349
260.000	17.198	.05815	9.7767	335.731	15948.7	19146.8	145.439	48.35	73.37	1301
270.000	16.907	.05915	9.1630	314.728	16631.2	19884.3	148.222	48.95	74.15	1259
280.000	16.616	.06018	8.5925	295.282	17320.0	20630.1	150.935	49.67	75.03	1217
290.000	16.325	.06126	8.0619	277.308	18016.1	21385.1	153.584	50.48	75.99	1178
300.000	16.034	.06237	7.5679	260.727	18719.9	22150.0	156.177	51.36	77.00	1140
310.000	15.745	.06351	7.1079	245.463	19431.9	22925.1	158.719	52.29	78.03	1103
320.000	15.455	.06470	6.6795	231.444	20152.0	23710.6	161.212	53.25	79.07	1069
330.000	15.167	.06593	6.2805	218.597	20882.6	24508.8	163.874	56.27	82.16	1030
340.000	14.881	.06720	5.9090	206.851	21635.7	25331.7	166.330	56.56	82.47	1001
350.000	14.596	.06851	5.5632	196.134	22391.0	26159.1	168.729	57.12	83.05	973
360.000	14.314	.06986	5.2415	186.378	23150.5	26993.0	171.078	57.86	83.76	947
370.000	14.034	.07126	4.9422	177.513	23915.4	27834.5	173.383	58.71	84.56	922
380.000	13.757	.07269	4.6640	169.472	24686.4	28684.4	175.650	59.65	85.42	898
390.000	13.484	.07416	4.4054	162.190	25464.0	29543.0	177.880	60.65	86.31	876
400.000	13.214	.07568	4.1651	155.605	26248.4	30410.7	180.076	61.69	87.23	855
410.000	12.948	.07723	3.9418	149.661	27039.9	31287.5	182.242	62.76	88.14	836
420.000	12.687	.07882	3.7344	144.304	27838.5	32173.5	184.377	63.85	89.07	818
430.000	12.431	.08044	3.5416	139.485	28644.3	33068.8	186.483	64.96	89.98	801
440.000	12.180	.08210	3.3624	135.159	29457.4	33973.1	188.562	66.08	90.89	786
450.000	11.933	.08380	3.1959	131.286	30277.6	34886.5	190.615	67.20	91.79	772
460.000	11.693	.08552	3.0409	127.829	31105.0	35808.8	192.642	68.33	92.67	759
470.000	11.458	.08728	2.8967	124.755	31939.5	36739.8	194.644	69.46	93.53	747
480.000	11.228	.08906	2.7624	122.034	32781.1	37679.4	196.622	70.58	94.38	736
490.000	11.005	.09087	2.6373	119.640	33629.6	38627.3	198.577	71.69	95.21	726
500.000	10.788	.09270	2.5207	117.548	34485.1	39583.5	200.508	72.80	96.02	718
520.000	10.371	.09642	2.3103	114.178	36216.4	41519.7	204.305	74.99	97.59	702
540.000	9.978	.10022	2.1266	111.761	37974.5	43486.6	208.016	77.14	99.09	690
560.000	9.610	.10406	1.9658	110.152	39759.2	45482.7	211.646	79.25	100.52	681
580.000	9.264	.10794	1.8244	109.224	41570.1	47507.0	215.198	81.31	101.91	674
600.000	8.941	.11184	1.6998	108.862	43407.1	49558.5	218.675	83.33	103.25	669
620.000	8.639	.11575	1.5895	108.964	45270.4	51636.8	222.082	85.31	104.57	666
640.000	8.357	.11966	1.4915	109.443	47159.9	53741.1	225.423	87.24	105.87	664
660.000	8.094	.12356	1.4040	110.224	49075.8	55871.4	228.700	89.14	107.16	663
680.000	7.847	.12744	1.3257	111.241	51018.4	58027.4	231.918	91.00	108.44	663
700.000	7.616	.13130	1.2552	112.443	52987.7	60209.0	235.080	92.81	109.72	664

Table 24. Continued.

ETHANE ISOBAR AT P = 600 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
99.516	22.018	.04542	31.5925	1007.711	5557.1	8282.2	79.292	47.08	67.42	2190
100.000	22.002	.04545	31.4756	1005.022	5587.9	8314.9	79.620	47.06	67.42	2188
110.000	21.692	.04610	29.1239	947.269	6223.0	8989.0	86.046	46.48	67.41	2137
120.000	21.387	.04676	26.9260	888.561	6857.5	9662.9	91.910	45.96	67.37	2081
130.000	21.086	.04743	24.9029	831.614	7490.9	10336.4	97.300	45.53	67.33	2022
140.000	20.788	.04810	23.0539	777.591	8123.5	11009.8	102.291	45.21	67.35	1962
150.000	20.493	.04880	21.3690	726.919	8755.8	11683.7	106.940	45.00	67.43	1903
160.000	20.200	.04951	19.8347	679.666	9388.3	12358.6	111.296	44.89	67.58	1844
170.000	19.909	.05023	18.4363	635.716	10021.8	13035.5	115.400	44.87	67.80	1787
180.000	19.620	.05097	17.1602	594.891	10656.7	13714.9	119.283	44.94	68.09	1731
190.000	19.332	.05173	15.9933	556.973	11293.8	14397.5	122.973	45.08	68.43	1676
200.000	19.045	.05251	14.9241	521.747	11933.4	15083.8	126.493	45.30	68.83	1623
210.000	18.760	.05331	13.9423	489.007	12576.0	15774.3	129.862	45.57	69.29	1572
220.000	18.475	.05413	13.0388	458.567	13222.0	16469.6	133.097	45.90	69.79	1522
230.000	18.191	.05497	12.2056	430.259	13871.9	17170.2	136.212	46.28	70.35	1474
240.000	17.908	.05584	11.4357	403.932	14526.2	17876.7	139.218	46.72	70.95	1428
250.000	17.625	.05674	10.7230	379.455	15185.3	18589.6	142.128	47.22	71.61	1383
260.000	17.343	.05766	10.0622	356.712	15851.7	19311.4	144.959	48.44	72.97	1336
270.000	17.061	.05861	9.4486	335.599	16527.8	20044.7	147.726	49.04	73.71	1295
280.000	16.779	.05960	8.8783	316.021	17210.2	20786.0	150.422	49.75	74.56	1254
290.000	16.499	.06061	8.3476	297.894	17899.5	21536.2	153.054	50.56	75.48	1216
300.000	16.219	.06166	7.8534	281.135	18596.5	22295.9	155.630	51.44	76.46	1178
310.000	15.940	.06273	7.3930	265.672	19301.4	23065.5	158.153	52.36	77.46	1143
320.000	15.663	.06385	6.9639	251.430	20014.4	23845.2	160.629	53.32	78.48	1109
330.000	15.386	.06499	6.5639	238.338	20737.7	24637.3	163.271	56.34	81.54	1071
340.000	15.112	.06617	6.1910	226.327	21483.4	25453.8	165.709	56.62	81.83	1042
350.000	14.839	.06739	5.8434	215.328	22231.4	26274.7	168.088	57.18	82.38	1015
360.000	14.569	.06864	5.5195	205.275	22983.7	27101.9	170.419	57.91	83.08	989
370.000	14.302	.06992	5.2176	196.098	23741.4	27936.7	172.706	58.76	83.98	964
380.000	14.037	.07124	4.9363	187.736	24505.3	28779.6	174.953	59.70	84.73	941
390.000	13.776	.07259	4.6743	180.127	25275.9	29631.3	177.166	60.69	85.61	919
400.000	13.518	.07397	4.4302	173.211	26053.5	30491.9	179.345	61.72	86.53	898
410.000	13.265	.07539	4.2028	166.933	26838.4	31361.8	181.492	62.79	87.45	879
420.000	13.015	.07683	3.9910	161.240	27630.8	32240.9	183.611	63.88	88.38	861
430.000	12.770	.07831	3.7936	156.085	28430.6	33129.3	185.701	64.99	89.30	844
440.000	12.529	.07982	3.6096	151.424	29238.0	34026.9	187.765	66.11	90.23	829
450.000	12.293	.08136	3.4380	147.215	30052.9	34933.7	189.803	67.23	91.14	814
460.000	12.062	.08291	3.2780	143.424	30875.3	35849.6	191.816	68.36	92.04	801
470.000	11.836	.08449	3.1286	140.017	31705.2	36774.5	193.805	69.48	92.94	789
480.000	11.615	.08610	2.9891	136.964	32542.5	37708.2	195.770	70.60	93.81	777
490.000	11.399	.08772	2.8587	134.238	33387.2	38650.7	197.714	71.72	94.67	767
500.000	11.189	.08937	2.7368	131.816	34239.3	39601.6	199.635	72.83	95.52	758
520.000	10.785	.09272	2.5159	127.791	35965.1	41528.6	203.413	75.02	97.17	741
540.000	10.402	.09614	2.3220	124.733	37719.4	43487.7	207.110	77.17	98.75	728
560.000	10.040	.09960	2.1511	122.505	39501.8	45477.9	210.729	79.28	100.27	717
580.000	9.699	.10310	2.0001	120.987	41311.9	47498.1	214.273	81.35	101.74	709
600.000	9.378	.10663	1.8663	120.075	43149.4	49547.1	217.747	83.38	103.16	702
620.000	9.077	.11017	1.7473	119.673	45014.2	51624.3	221.152	85.36	104.55	698
640.000	8.794	.11371	1.6411	119.697	46906.2	53729.0	224.493	87.30	105.92	694
660.000	8.528	.11726	1.5460	120.075	48825.3	55860.8	227.773	89.20	107.26	692
680.000	8.279	.12079	1.4605	120.742	50771.5	58019.2	230.995	91.05	108.58	691
700.000	8.044	.12432	1.3834	121.644	52744.9	60203.9	234.161	92.87	109.89	691

Table 24. Continued.

ETHANE ISOBAR AT P = 700 BAR

T DEG K	DEN MOL/L	VOL L/MOL	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
100.949	22.071	.04531	31.7404	1032.743	5596.8	8768.4	79.617	47.17	67.39	2215
110.000	21.796	.04588	29.6383	983.723	6166.5	9378.1	85.402	46.67	67.34	2172
120.000	21.497	.04652	27.4559	927.307	6794.8	10051.1	91.258	46.15	67.26	2119
130.000	21.203	.04716	25.4427	871.751	7422.0	10723.4	96.639	45.72	67.20	2064
140.000	20.913	.04782	23.5999	818.585	8048.1	11395.3	101.618	45.41	67.18	2006
150.000	20.627	.04848	21.9186	768.432	8673.6	12067.3	106.255	45.19	67.24	1949
160.000	20.343	.04916	20.3862	721.482	9299.1	12740.2	110.598	45.08	67.35	1893
170.000	20.061	.04985	18.9886	677.699	9925.2	13414.5	114.686	45.07	67.54	1837
180.000	19.782	.05055	17.7125	636.946	10552.6	14091.1	118.553	45.13	67.79	1783
190.000	19.505	.05127	16.5450	599.030	11181.7	14770.5	122.227	45.27	68.10	1730
200.000	19.230	.05200	15.4750	563.764	11813.1	15453.3	125.728	45.48	68.46	1679
210.000	18.956	.05275	14.4921	530.950	12447.1	16139.9	129.078	45.75	68.87	1630
220.000	18.684	.05352	13.5875	500.408	13084.2	16830.8	132.293	46.08	69.33	1582
230.000	18.413	.05431	12.7532	471.971	13724.9	17526.5	135.385	46.46	69.84	1536
240.000	18.143	.05512	11.9822	445.491	14369.5	18227.7	138.369	46.90	70.39	1491
250.000	17.875	.05594	11.2684	420.835	15018.6	18934.7	141.255	47.40	71.00	1447
260.000	17.608	.05679	10.6065	397.883	15674.7	19650.2	144.062	48.60	72.31	1403
270.000	17.342	.05766	9.9918	376.528	16340.2	20376.7	146.803	49.20	73.00	1363
280.000	17.077	.05856	9.4202	356.676	17011.6	21110.7	149.472	49.91	73.80	1324
290.000	16.814	.05948	8.8881	338.237	17689.7	21853.0	152.077	50.72	74.68	1286
300.000	16.552	.06042	8.3921	321.131	18375.2	22604.4	154.624	51.59	75.61	1251
310.000	16.291	.06138	7.9296	305.281	19068.4	23365.3	157.119	52.51	76.57	1216
320.000	16.032	.06237	7.4980	290.616	19769.6	24135.8	159.565	53.46	77.54	1184
330.000	15.775	.06339	7.0950	277.065	20480.9	24918.3	162.179	56.47	80.57	1146
340.000	15.520	.06443	6.7186	264.564	21214.7	25725.0	164.587	56.75	80.83	1119
350.000	15.267	.06550	6.3669	253.044	21950.7	26535.7	166.937	57.30	81.35	1093
360.000	15.017	.06659	6.0383	242.445	22691.1	27352.5	169.238	58.03	82.03	1067
370.000	14.769	.06771	5.7311	232.705	23437.1	28176.7	171.496	58.87	82.81	1043
380.000	14.524	.06885	5.4440	223.764	24189.4	29008.9	173.715	59.80	83.65	1020
390.000	14.283	.07001	5.1755	215.563	24948.8	29849.8	175.899	60.78	84.54	998
400.000	14.044	.07120	4.9244	208.050	25715.5	30699.7	178.051	61.81	85.45	977
410.000	13.809	.07241	4.6896	201.172	26489.8	31558.8	180.172	62.88	86.38	958
420.000	13.578	.07365	4.4700	194.880	27271.9	32427.3	182.265	63.96	87.32	940
430.000	13.351	.07490	4.2644	189.128	28062.0	33305.2	184.330	65.06	88.26	923
440.000	13.127	.07618	4.0719	183.872	28860.0	34192.5	186.370	66.18	89.20	907
450.000	12.908	.07747	3.8916	179.075	29666.1	35089.2	188.385	67.30	90.14	893
460.000	12.693	.07879	3.7227	174.700	30480.2	35995.2	190.377	68.42	91.07	879
470.000	12.482	.08012	3.5643	170.714	31302.3	36910.6	192.345	69.55	92.00	866
480.000	12.275	.08147	3.4157	167.088	32132.5	37835.1	194.292	70.67	92.91	854
490.000	12.073	.08283	3.2762	163.794	32970.5	38768.7	196.217	71.78	93.81	843
500.000	11.875	.08421	3.1452	160.808	33816.5	39711.2	198.121	72.89	94.70	833
520.000	11.493	.08701	2.9062	155.670	35531.9	41622.8	201.869	75.08	96.44	815
540.000	11.128	.08985	2.6944	151.521	37278.3	43568.6	205.541	77.24	98.13	800
560.000	10.781	.09275	2.5062	148.227	39055.0	45547.7	209.139	79.36	99.77	787
580.000	10.452	.09568	2.3385	145.679	40861.6	47559.0	212.668	81.43	101.36	776
600.000	10.139	.09863	2.1886	143.779	42697.7	49601.7	216.131	83.46	102.90	767
620.000	9.843	.10160	2.0542	142.442	44562.9	51674.8	219.529	85.44	104.40	760
640.000	9.562	.10458	1.9334	141.593	46456.8	53777.5	222.867	87.39	105.87	755
660.000	9.296	.10757	1.8245	141.165	48379.3	55909.2	226.147	89.29	107.30	751
680.000	9.045	.11056	1.7260	141.098	50330.0	58069.3	229.371	91.16	108.71	748
700.000	8.807	.11355	1.6367	141.340	52308.6	60257.1	232.542	92.98	110.08	745

Table 25. The Joule-Thomson inversion locus.

THE JOULE-THOMSON INVERSION LOCUS FOR ETHANE

T,F	T,R	P,PSI	LB/CUFT	T,F	T,R	P,PSI	LB/CUFT
-10.00	449.67	387	28.26	310.00	769.67	6803	22.25
0.00	459.67	722	28.05	320.00	779.67	6909	22.09
10.00	469.67	1045	27.85	330.00	789.67	7012	21.92
20.00	479.67	1356	27.64	340.00	799.67	7111	21.76
30.00	489.67	1654	27.44	350.00	809.67	7206	21.60
40.00	499.67	1942	27.24	360.00	819.67	7297	21.44
50.00	509.67	2218	27.04	370.00	829.67	7386	21.28
60.00	519.67	2485	26.83	380.00	839.67	7471	21.12
70.00	529.67	2742	26.63	390.00	849.67	7552	20.96
80.00	539.67	2989	26.44	400.00	859.67	7631	20.80
90.00	549.67	3228	26.24	410.00	869.67	7706	20.65
100.00	559.67	3457	26.04	420.00	879.67	7778	20.49
110.00	569.67	3679	25.85	430.00	889.67	7847	20.34
120.00	579.67	3893	25.65	440.00	899.67	7914	20.19
130.00	589.67	4099	25.46	450.00	909.67	7977	20.04
140.00	599.67	4298	25.27	460.00	919.67	8037	19.88
150.00	609.67	4490	25.08	470.00	929.67	8094	19.73
160.00	619.67	4675	24.89	480.00	939.67	8149	19.58
170.00	629.67	4854	24.71	490.00	949.67	8200	19.43
180.00	639.67	5026	24.52	500.00	959.67	8249	19.29
190.00	649.67	5193	24.34	510.00	969.67	8295	19.14
200.00	659.67	5354	24.16	520.00	979.67	8338	18.99
210.00	669.67	5510	23.98	530.00	989.67	8379	18.84
220.00	679.67	5660	23.80	540.00	999.67	8416	18.69
230.00	689.67	5805	23.62	550.00	1009.67	8451	18.55
240.00	699.67	5946	23.44	560.00	1019.67	8484	18.40
250.00	709.67	6081	23.27	570.00	1029.67	8513	18.25
260.00	719.67	6212	23.10	580.00	1039.67	8540	18.11
270.00	729.67	6339	22.92	590.00	1049.67	8565	17.96
280.00	739.67	6461	22.75	600.00	1059.67	8587	17.82
290.00	749.67	6579	22.58	610.00	1069.67	8606	17.67
300.00	759.67	6693	22.42	620.00	1079.67	8623	17.52

Table 26. Thermophysical properties of the saturated liquid.

This table was computed along paths described in section 3.0. Column headings have the following interpretations--

DPS/DT	≡	dP_σ/dT, vapor pressure,
DDL/DT	≡	dp_ℓ/dT, saturated liquid,
DP/DT	≡	$(\partial P/\partial T)$, single phase,
DP/DD	≡	$(\partial P/\partial \rho)$, single phase,
Q,VAP	≡	ΔH_{vap}, heat of vaporization,
CV	≡	$C_v(\rho,T)$,
CS	≡	$C_\sigma(T)$
CP	≡	$C_p(\rho,T)$
W	≡	speed of sound

Table 26. Thermophysical properties of the saturated liquid.

PROPERTIES OF SATURATED LIQUID ETHANE

T DEG F	P PSI	DEN LB/CUFT	V,LIQ CUFT/LB	V,GAS CUFT/LB	DPS/DT PSI/R	DDL/DT LB/CUFT/R	DP/DT PSI/R	DP/DD PSICUFT/LB	Q,VAP BTU/LB	Q,XPT BTU/LB
-297.044	.1640E-03	40.698	.024571	.3515E+06	.2408E-04	-.037939	249.569	.6578E+04	254.95	250.35
-280.000	.1548E-02	40.050	.024968	.4130E+05	.1828E-03	-.038043	228.636	.6010E+04	251.21	247.73
-270.000	.4711E-02	39.670	.025208	.1435E+05	.4937E-03	-.038136	216.948	.5689E+04	248.81	246.05
-260.000	.1268E-01	39.288	.025453	.5617E+04	.1186E-02	-.038254	205.779	.5379E+04	246.32	244.26
-250.000	.3075E-01	38.904	.025704	.2433E+04	.2581E-02	-.038401	195.148	.5082E+04	243.78	242.36
-240.000	.6822E-01	38.520	.025961	.1149E+04	.5159E-02	-.038576	185.058	.4797E+04	241.19	240.36
-230.000	.1401E+00	38.133	.026224	.5849E+03	.9591E-02	-.038783	175.493	.4525E+04	238.59	238.25
-220.000	.2691E+00	37.744	.026494	.3176E+03	.1674E-01	-.039024	166.434	.4265E+04	235.97	236.04
-210.000	.4875E+00	37.352	.026772	.1824E+03	.2767E-01	-.039300	157.855	.4016E+04	233.33	233.72
-200.000	.8392E+00	36.958	.027058	.1100E+03	.4361E-01	-.039616	149.728	.3778E+04	230.68	231.29
-190.000	.1381E+01	36.560	.027352	.6930E+02	.6591E-01	-.039973	142.026	.3551E+04	228.02	228.75
-180.000	.2184E+01	36.158	.027656	.4533E+02	.9604E-01	-.040375	134.721	.3334E+04	225.32	226.10
-170.000	.3333E+01	35.752	.027970	.3066E+02	.1355E+00	-.040827	127.784	.3127E+04	222.58	223.34
-160.000	.4929E+01	35.341	.028295	.2136E+02	.1857E+00	-.041333	121.191	.2928E+04	219.80	220.46
-150.000	.7087E+01	34.925	.028633	.1528E+02	.2481E+00	-.041897	114.916	.2737E+04	216.95	217.47
-140.000	.9937E+01	34.503	.028983	.1118E+02	.3242E+00	-.042526	108.936	.2554E+04	214.03	214.36
-130.000	.1362E+02	34.074	.029347	.8357E+01	.4151E+00	-.043227	103.229	.2378E+04	211.01	211.11
-120.000	.1829E+02	33.638	.029728	.6362E+01	.5219E+00	-.044007	97.773	.2210E+04	207.89	207.74
-110.000	.2412E+02	33.194	.030126	.4924E+01	.6458E+00	-.044876	92.550	.2048E+04	204.64	204.24
-100.000	.3127E+02	32.741	.030543	.3867E+01	.7876E+00	-.045844	87.542	.1892E+04	201.24	200.59
-90.000	.3993E+02	32.277	.030982	.3077E+01	.9481E+00	-.046925	82.730	.1743E+04	197.68	196.78
-80.000	.5029E+02	31.802	.031445	.2477E+01	.1128E+01	-.048134	78.099	.1599E+04	193.93	192.82
-70.000	.6256E+02	31.314	.031935	.2015E+01	.1328E+01	-.049490	73.634	.1461E+04	189.97	188.67
-60.000	.7692E+02	30.811	.032456	.1654E+01	.1548E+01	-.051016	69.320	.1328E+04	185.78	184.34
-50.000	.9359E+02	30.293	.033011	.1368E+01	.1790E+01	-.052742	65.144	.1201E+04	181.33	179.80
-40.000	.1128E+03	29.756	.033607	.1140E+01	.2053E+01	-.054705	61.092	.1079E+04	176.58	175.03
-30.000	.1347E+03	29.198	.034249	.9561E+00	.2338E+01	-.056952	57.152	.9624E+03	171.51	169.99
-20.000	.1596E+03	28.615	.034946	.8058E+00	.2646E+01	-.059546	53.311	.8508E+03	166.08	164.67
-10.000	.1877E+03	28.005	.035708	.6821E+00	.2977E+01	-.062572	49.557	.7444E+03	160.25	159.00
-.000	.2193E+03	27.362	.036547	.5792E+00	.3333E+01	-.066148	45.878	.6432E+03	153.95	152.94
10.000	.2545E+03	26.680	.037481	.4931E+00	.3713E+01	-.070442	42.260	.5472E+03	147.12	146.40
20.000	.2936E+03	25.950	.038536	.4202E+00	.4120E+01	-.075708	38.689	.4566E+03	139.67	139.29
30.000	.3370E+03	25.161	.039744	.3581E+00	.4555E+01	-.082348	35.147	.3715E+03	131.47	131.46
40.000	.3848E+03	24.296	.041158	.3045E+00	.5021E+01	-.091045	31.613	.2921E+03	122.33	122.71
50.000	.4375E+03	23.329	.042865	.2577E+00	.5523E+01	-.103072	28.057	.2186E+03	111.98	112.70
60.000	.4954E+03	22.215	.045015	.2162E+00	.6067E+01	-.121177	24.431	.1515E+03	99.92	100.89
70.000	.5590E+03	20.862	.047933	.1781E+00	.6668E+01	-.152781	20.642	.9146E+02	85.15	86.19
80.000	.6291E+03	19.023	.052569	.1410E+00	.7361E+01	-.229598	16.440	.3954E+02	65.04	65.70
89.924	.7065E+03	12.765	.078339	.7834E-01	.8601E+01	0.000000	8.601	0.	0.00	0.00

Table 26. Continued.

PROPERTIES OF SATURATED LIQUID ETHANE

T DEG F	T DEG R	P PSI	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CS BTU/LB/R	CP BTU/LB/R	W FT/S	CS,XPT BTU/LB/R
-297.044	162.626	.1643E-03	76.078	76.078	.61190	.368	.540	.540	6688	.540
-280.000	179.670	.1548E-02	85.317	85.317	.66592	.363	.544	.544	6455	.544
-270.000	189.670	.4711E-02	90.758	90.758	.69540	.360	.545	.545	6314	.545
-260.000	199.670	.1268E-01	96.212	96.212	.72343	.357	.546	.546	6170	.546
-250.000	209.670	.3075E-01	101.677	101.677	.75013	.355	.547	.547	6024	.547
-240.000	219.670	.6822E-01	107.154	107.154	.77565	.353	.548	.548	5879	.548
-230.000	229.670	.1401E+00	112.643	112.644	.80008	.351	.550	.550	5733	.550
-220.000	239.670	.2691E+00	118.147	118.148	.82354	.349	.551	.551	5587	.551
-210.000	249.670	.4875E+00	123.667	123.670	.84610	.347	.553	.553	5442	.553
-200.000	259.670	.8392E+00	129.206	129.210	.86785	.346	.555	.555	5297	.555
-190.000	269.670	.1381E+01	134.768	134.775	.88887	.345	.557	.557	5154	.557
-180.000	279.670	.2184E+01	140.355	140.366	.90921	.345	.560	.560	5011	.560
-170.000	289.670	.3333E+01	145.971	145.988	.92895	.344	.563	.563	4868	.563
-160.000	299.670	.4929E+01	151.620	151.646	.94812	.344	.567	.567	4727	.567
-150.000	309.670	.7087E+01	157.306	157.343	.96679	.344	.571	.571	4586	.571
-140.000	319.670	.9937E+01	163.033	163.086	.98499	.345	.575	.576	4445	.575
-130.000	329.670	.1362E+02	168.805	168.879	1.00277	.345	.580	.581	4306	.580
-120.000	339.670	.1829E+02	174.626	174.727	1.02017	.346	.585	.586	4166	.585
-110.000	349.670	.2412E+02	180.502	180.637	1.03722	.347	.591	.592	4027	.591
-100.000	359.670	.3127E+02	186.438	186.615	1.05396	.348	.597	.599	3887	.597
-90.000	369.670	.3993E+02	192.438	192.667	1.07043	.349	.604	.607	3748	.604
-80.000	379.670	.5029E+02	198.510	198.803	1.08664	.350	.611	.615	3608	.611
-70.000	389.670	.6256E+02	204.659	205.029	1.10264	.352	.620	.625	3468	.620
-60.000	399.670	.7692E+02	210.893	211.356	1.11846	.353	.629	.635	3327	.629
-50.000	409.670	.9359E+02	217.222	217.794	1.13412	.355	.639	.647	3185	.639
-40.000	419.670	.1128E+03	223.655	224.357	1.14966	.357	.650	.660	3041	.650
-30.000	429.670	.1347E+03	230.204	231.058	1.16512	.359	.663	.676	2897	.663
-20.000	439.670	.1596E+03	236.882	237.915	1.18052	.361	.677	.693	2750	.677
-10.000	449.670	.1877E+03	243.708	244.947	1.19592	.364	.693	.714	2601	.693
-.000	459.670	.2193E+03	250.694	252.178	1.21136	.367	.712	.739	2450	.712
10.000	469.670	.2545E+03	257.915	259.683	1.22699	.375	.739	.774	2287	.734
20.000	479.670	.2936E+03	265.373	267.468	1.24282	.378	.764	.810	2129	.760
30.000	489.670	.3370E+03	273.101	275.581	1.25890	.382	.796	.858	1966	.792
40.000	499.670	.3848E+03	281.167	284.100	1.27540	.386	.838	.923	1797	.834
50.000	509.670	.4375E+03	289.673	293.149	1.29252	.392	.893	1.016	1620	.890
60.000	519.670	.4954E+03	298.806	302.936	1.31062	.399	.976	1.167	1433	.973
70.000	529.670	.5590E+03	308.918	313.880	1.33043	.408	1.119	1.458	1230	1.114
80.000	539.670	.6291E+03	321.008	327.129	1.35399	.425	1.467	2.312	998	1.446
89.924	549.594	.7065E+03	351.665	361.914	1.41608	0.000	0.000	0.000	0	0.000

Table 27. Thermophysical properties along isobars*

The following pages give physical and thermodynamic properties along selected isobars, as computed by methods of section 3 of the text.

The first line of each table refers to freezing liquid on the P(T) melting line.

Each table at $P < P_c$ contains a blank line for the transition from saturated liquid to vapor, as seen by the abrupt decrease of density.

Table headings for partial derivatives have the following interpretations--

$$DP/DT \equiv \partial P/\partial T,$$
$$DP/DD \equiv \partial P/\partial \rho.$$

The specific heat interpretations are--

$$CV \equiv C_v(\rho,T),$$
$$CP \equiv C_p(\rho,T).$$

*These tables are extrapolated beyond the range of P-ρ-T data used for adjusting the equation of state ($P \sim 350$ bar).

Table 27. Thermophysical properties along isobars*

ETHANE ISOBAR AT P = 1 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-297.042	162.628	40.698	.02457	249.569	6578.25	76.08	76.08	.61191	.368	.540	6688
-280.000	179.670	40.051	.02497	228.639	6010.24	85.32	85.32	.66592	.363	.544	6455
-260.000	199.670	39.288	.02545	205.782	5379.41	96.21	96.22	.72342	.357	.546	6170
-240.000	219.670	38.520	.02596	185.061	4797.26	107.15	107.16	.77565	.353	.548	5879
-220.000	239.670	37.744	.02649	166.437	4264.69	118.15	118.15	.82353	.349	.551	5587
-200.000	259.670	36.958	.02706	149.729	3778.50	129.21	129.21	.86785	.346	.555	5297
-196.577	263.093	36.822	.02716	147.045	3699.57	131.11	131.11	.87513	.346	.556	5248
-196.577	263.093	.01076	93.501	.00383	93.04	344.50	361.82	1.75017	.240	.307	742
-180.000	279.670	.01005	99.465	.00360	99.05	348.52	366.94	1.76904	.244	.311	764
-160.000	299.670	.00938	106.649	.00335	106.28	353.47	373.22	1.79072	.250	.317	789
-140.000	319.670	.00879	113.825	.00314	113.49	358.53	379.61	1.81138	.256	.323	814
-120.000	339.670	.00826	121.094	.00295	120.70	363.72	386.13	1.83116	.263	.329	837
-100.000	359.670	.00780	128.165	.00279	127.89	369.05	392.79	1.85020	.270	.336	859
-80.000	379.670	.00739	135.321	.00264	135.07	374.53	399.59	1.86860	.277	.344	880
-60.000	399.670	.00702	142.479	.00251	142.25	380.16	406.54	1.88645	.285	.352	901
-40.000	419.670	.00668	149.635	.00239	149.42	385.95	413.66	1.90383	.294	.360	921
-20.000	439.670	.00638	156.788	.00228	156.59	391.92	420.95	1.92081	.303	.369	940
-.000	459.670	.00610	163.940	.00218	163.76	398.07	428.43	1.93743	.312	.378	959
20.000	479.670	.00584	171.091	.00209	170.92	404.41	436.09	1.95374	.322	.388	977
40.000	499.670	.00561	178.240	.00200	178.08	410.94	443.95	1.96979	.332	.398	994
60.000	519.670	.00539	185.388	.00193	185.24	417.68	452.01	1.98561	.342	.408	1012
80.000	539.670	.00519	192.535	.00185	192.40	424.62	460.28	2.00123	.353	.419	1028
100.000	559.670	.00501	199.681	.00179	199.55	431.79	468.76	2.01666	.363	.430	1045
120.000	579.670	.00483	206.827	.00173	206.71	439.16	477.46	2.03194	.374	.441	1061
140.000	599.670	.00467	213.971	.00167	213.86	446.77	486.39	2.04708	.386	.452	1077
160.000	619.670	.00452	221.116	.00161	221.01	454.59	495.54	2.06208	.397	.463	1093
180.000	639.670	.00438	228.259	.00156	228.16	462.64	504.91	2.07697	.408	.474	1108
200.000	659.670	.00425	235.403	.00152	235.31	470.92	514.52	2.09176	.420	.486	1123
220.000	679.670	.00412	242.546	.00147	242.46	479.44	524.35	2.10644	.431	.497	1138
240.000	699.670	.00400	249.688	.00143	249.61	488.18	534.41	2.12103	.443	.509	1152
260.000	719.670	.00389	256.830	.00139	256.75	497.15	544.70	2.13554	.454	.520	1167
280.000	739.670	.00379	263.972	.00135	263.90	506.34	555.22	2.14996	.466	.532	1181
300.000	759.670	.00369	271.114	.00132	271.04	515.77	565.97	2.16430	.477	.543	1195
320.000	779.670	.00359	278.255	.00128	278.19	525.42	576.95	2.17856	.488	.554	1209
340.000	799.670	.00350	285.396	.00125	285.34	535.30	588.15	2.19274	.499	.566	1223
360.000	819.670	.00342	292.537	.00122	292.48	545.40	599.57	2.20685	.511	.577	1237
380.000	839.670	.00334	299.678	.00119	299.62	555.72	611.22	2.22089	.522	.588	1250
400.000	859.670	.00326	306.818	.00116	306.77	566.26	623.08	2.23485	.532	.599	1264
420.000	879.670	.00319	313.959	.00114	313.91	577.02	635.16	2.24874	.543	.609	1277
440.000	899.670	.00311	321.099	.00111	321.05	587.99	647.45	2.26255	.554	.620	1290
460.000	919.670	.00305	328.239	.00109	328.20	599.17	659.95	2.27630	.564	.630	1303
480.000	939.670	.00298	335.379	.00106	335.34	610.56	672.66	2.28997	.575	.641	1316
500.000	959.670	.00292	342.518	.00104	342.48	622.15	685.57	2.30357	.585	.651	1328
520.000	979.670	.00286	349.658	.00102	349.62	633.94	698.69	2.31710	.595	.661	1341
540.000	999.670	.00280	356.798	.00100	356.77	645.94	712.01	2.33055	.605	.671	1354
560.000	1019.670	.00275	363.937	.00098	363.91	658.13	725.52	2.34394	.614	.681	1366
580.000	1039.670	.00269	371.076	.00096	371.05	670.51	739.23	2.35725	.624	.690	1378
600.000	1059.670	.00264	378.216	.00094	378.19	683.09	753.13	2.37049	.634	.700	1391
640.000	1099.670	.00255	392.494	.00091	392.47	708.81	781.49	2.39676	.652	.718	1415
680.000	1139.670	.00246	406.772	.00088	406.76	735.26	810.59	2.42275	.670	.737	1438
720.000	1179.670	.00238	421.050	.00085	421.04	762.43	840.40	2.44846	.688	.754	1462
760.000	1219.670	.00230	435.327	.00082	435.32	790.31	870.92	2.47390	.705	.771	1485
800.000	1259.670	.00222	449.605	.00079	449.60	818.86	902.11	2.49907	.722	.788	1507

Table 27. Continued.

ETHANE ISOBAR AT P = 5 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-297.034	162.636	40.698	.02457	249.570	6578.82	76.08	76.10	.61192	.368	.540	6688
-280.000	179.670	40.051	.02497	228.652	6011.15	85.31	85.34	.66590	.363	.544	6456
-260.000	199.670	39.289	.02545	205.796	5380.36	96.21	96.23	.72340	.357	.546	6170
-240.000	219.670	38.521	.02596	185.076	4798.24	107.15	107.17	.77563	.353	.548	5879
-220.000	239.670	37.745	.02649	166.452	4265.69	118.14	118.17	.82351	.349	.551	5588
-200.000	259.670	36.959	.02705	149.745	3779.52	129.20	129.23	.86783	.346	.555	5298
-180.000	279.670	36.159	.02766	134.732	3335.07	140.35	140.38	.90920	.345	.560	5011
-160.000	299.670	35.341	.02830	121.191	2927.63	151.62	151.65	.94812	.344	.567	4727
-159.619	300.051	35.326	.02831	120.946	2920.20	151.84	151.86	.94884	.344	.567	4721
-159.619	300.051	.04744	21.079	.01717	103.73	353.10	372.62	1.68321	.252	.322	783
-140.000	319.670	.04441	22.517	.01602	111.11	358.13	378.98	1.70532	.257	.327	808
-120.000	339.670	.04171	23.976	.01502	118.56	363.37	385.57	1.72530	.264	.332	832
-100.000	359.670	.03932	25.430	.01414	125.96	368.74	392.28	1.74449	.271	.339	855
-80.000	379.670	.03720	26.880	.01336	133.32	374.24	399.13	1.76302	.278	.346	876
-60.000	399.670	.03530	28.327	.01267	140.65	379.90	406.12	1.78097	.286	.354	897
-40.000	419.670	.03359	29.772	.01205	147.95	385.71	413.28	1.79843	.294	.362	918
-20.000	439.670	.03204	31.214	.01148	155.24	391.70	420.60	1.81547	.303	.370	937
-.000	459.670	.03062	32.655	.01097	162.50	397.86	428.10	1.83214	.312	.380	956
20.000	479.670	.02933	34.094	.01050	169.75	404.22	435.78	1.84851	.322	.389	974
40.000	499.670	.02814	35.532	.01008	176.99	410.76	443.66	1.86460	.332	.399	992
60.000	519.670	.02705	36.969	.00968	184.22	417.51	451.74	1.88045	.342	.409	1010
80.000	539.670	.02604	38.406	.00932	191.44	424.47	460.03	1.89610	.353	.420	1027
100.000	559.670	.02510	39.841	.00898	198.66	431.64	468.53	1.91156	.364	.430	1043
120.000	579.670	.02423	41.276	.00867	205.86	439.03	477.24	1.92686	.375	.441	1060
140.000	599.670	.02341	42.710	.00837	213.06	446.64	486.18	1.94202	.386	.452	1075
160.000	619.670	.02265	44.144	.00810	220.26	454.47	495.34	1.95704	.397	.464	1091
180.000	639.670	.02194	45.577	.00785	227.45	462.53	504.73	1.97195	.408	.475	1107
200.000	659.670	.02127	47.010	.00761	234.64	470.81	514.34	1.98675	.420	.486	1122
220.000	679.670	.02064	48.442	.00738	241.82	479.33	524.18	2.00144	.431	.498	1137
240.000	699.670	.02005	49.874	.00717	249.01	488.08	534.25	2.01605	.443	.509	1151
260.000	719.670	.01949	51.306	.00697	256.18	497.05	544.55	2.03056	.454	.521	1166
280.000	739.670	.01896	52.737	.00678	263.36	506.25	555.08	2.04499	.466	.532	1180
300.000	759.670	.01846	54.169	.00660	270.53	515.68	565.84	2.05934	.477	.543	1194
320.000	779.670	.01799	55.600	.00643	277.70	525.34	576.82	2.07361	.486	.555	1208
340.000	799.670	.01753	57.030	.00627	284.87	535.22	588.02	2.08780	.500	.566	1222
360.000	819.670	.01711	58.461	.00611	292.04	545.33	599.45	2.10192	.511	.577	1236
380.000	839.670	.01670	59.891	.00597	299.20	555.65	611.10	2.11596	.522	.588	1250
400.000	859.670	.01631	61.322	.00583	306.37	566.19	622.97	2.12992	.532	.599	1263
420.000	879.670	.01594	62.752	.00569	313.53	576.95	635.05	2.14382	.543	.610	1276
440.000	899.670	.01558	64.182	.00557	320.69	587.92	647.35	2.15764	.554	.620	1289
460.000	919.670	.01524	65.612	.00544	327.85	599.11	659.85	2.17139	.564	.631	1302
480.000	939.670	.01492	67.042	.00533	335.01	610.50	672.57	2.18506	.575	.641	1315
500.000	959.670	.01460	68.471	.00522	342.17	622.09	685.49	2.19867	.585	.651	1328
520.000	979.670	.01431	69.901	.00511	349.33	633.89	698.61	2.21220	.595	.661	1341
540.000	999.670	.01402	71.330	.00501	356.48	645.88	711.93	2.22566	.605	.671	1353
560.000	1019.670	.01374	72.760	.00491	363.64	658.08	725.44	2.23905	.614	.681	1366
580.000	1039.670	.01348	74.189	.00481	370.79	670.46	739.15	2.25236	.624	.690	1378
600.000	1059.670	.01322	75.618	.00472	377.95	683.04	753.06	2.26561	.634	.700	1390
640.000	1099.670	.01274	78.476	.00455	392.25	708.77	781.42	2.29188	.652	.719	1414
680.000	1139.670	.01229	81.334	.00439	406.56	735.22	810.53	2.31788	.670	.737	1438
720.000	1179.670	.01188	84.192	.00424	420.86	762.40	840.35	2.34359	.688	.754	1461
760.000	1219.670	.01149	87.050	.00410	435.16	790.27	870.87	2.36903	.705	.772	1485
800.000	1259.670	.01112	89.907	.00397	449.45	818.82	902.07	2.39420	.722	.788	1507

Table 27. Continued.

ETHANE ISOBAR AT P = 10 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-297.023	162.647	40.699	.02457	249.572	6579.53	76.08	76.13	.61193	.368	.540	6688
-280.000	179.670	40.052	.02497	228.668	6012.27	85.31	85.36	.66588	.363	.544	6456
-260.000	199.670	39.290	.02545	205.813	5381.54	96.20	96.25	.72338	.357	.546	6171
-240.000	219.670	38.522	.02596	185.094	4799.47	107.14	107.19	.77560	.353	.548	5880
-220.000	239.670	37.746	.02649	166.471	4206.94	118.14	118.18	.82349	.349	.551	5588
-200.000	259.670	36.960	.02706	149.765	3780.80	129.19	129.24	.86781	.346	.555	5299
-180.000	279.670	36.160	.02765	134.753	3336.37	140.34	140.39	.90917	.345	.560	5012
-160.000	299.670	35.343	.02829	121.213	2928.95	151.61	151.66	.94809	.344	.567	4728
-140.000	319.670	34.503	.02898	108.936	2554.02	163.03	163.09	.98499	.345	.576	4446
-139.806	319.864	34.495	.02899	108.823	2550.53	163.14	163.20	.98534	.345	.576	4443
-139.806	319.864	.08995	11.117	.03287	108.28	357.65	378.23	1.65648	.259	.332	861
-120.000	339.670	.08434	11.857	.03067	116.01	362.91	384.87	1.67823	.265	.337	826
-100.000	359.670	.07938	12.598	.02878	123.69	368.33	391.65	1.69764	.272	.342	849
-80.000	379.670	.07500	13.334	.02712	131.28	373.87	398.56	1.71633	.279	.349	872
-60.000	399.670	.07109	14.067	.02566	138.80	379.56	405.61	1.73441	.286	.356	893
-40.000	419.670	.06758	14.798	.02436	146.27	385.40	412.80	1.75198	.295	.364	914
-20.000	439.670	.06441	15.526	.02319	153.69	391.41	420.16	1.76911	.304	.372	934
-.000	459.670	.06153	16.253	.02213	161.09	397.60	427.69	1.78585	.313	.381	953
20.000	479.670	.05890	16.978	.02117	168.45	403.97	435.41	1.80228	.322	.390	972
40.000	499.670	.05649	17.702	.02029	175.78	410.53	443.31	1.81842	.332	.400	990
60.000	519.670	.05427	18.425	.01948	183.10	417.30	451.41	1.83432	.342	.410	1008
80.000	539.670	.05223	19.147	.01874	190.40	424.27	459.72	1.85000	.353	.421	1025
100.000	559.670	.05033	19.868	.01805	197.68	431.45	468.24	1.86550	.364	.431	1041
120.000	579.670	.04857	20.589	.01741	204.96	438.84	476.97	1.88082	.375	.442	1058
140.000	599.670	.04693	21.309	.01682	212.22	446.46	485.92	1.89601	.386	.453	1074
160.000	619.670	.04540	22.029	.01627	219.46	454.30	495.10	1.91105	.397	.464	1090
180.000	639.670	.04396	22.748	.01575	226.71	462.37	504.49	1.92598	.409	.476	1105
200.000	659.670	.04261	23.466	.01526	233.94	470.67	514.12	1.94080	.420	.487	1121
220.000	679.670	.04135	24.185	.01481	241.17	479.19	523.97	1.95551	.431	.498	1136
240.000	699.670	.04016	24.903	.01438	248.38	487.94	534.05	1.97013	.443	.510	1150
260.000	719.670	.03903	25.621	.01397	255.60	496.92	544.36	1.98465	.454	.521	1165
280.000	739.670	.03797	26.338	.01359	262.81	506.13	554.90	1.99910	.466	.533	1179
300.000	759.670	.03696	27.055	.01323	270.01	515.56	565.66	2.01345	.477	.544	1194
320.000	779.670	.03601	27.772	.01288	277.21	525.22	576.65	2.02773	.488	.555	1208
340.000	799.670	.03510	28.489	.01256	284.41	535.11	587.87	2.04193	.500	.566	1222
360.000	819.670	.03424	29.206	.01225	291.60	545.22	599.30	2.05606	.511	.577	1235
380.000	839.670	.03342	29.923	.01195	298.79	555.55	610.96	2.07011	.522	.588	1249
400.000	859.670	.03264	30.639	.01167	305.98	566.09	622.83	2.08408	.533	.599	1262
420.000	879.670	.03189	31.355	.01141	313.16	576.86	634.92	2.09798	.543	.610	1276
440.000	899.670	.03118	32.071	.01115	320.35	587.83	647.22	2.11181	.554	.620	1289
460.000	919.670	.03050	32.787	.01091	327.53	599.02	659.73	2.12556	.564	.631	1302
480.000	939.670	.02985	33.503	.01067	334.70	610.41	672.45	2.13924	.575	.641	1315
500.000	959.670	.02922	34.219	.01045	341.88	622.01	685.37	2.15285	.585	.651	1328
520.000	979.670	.02863	34.934	.01023	349.05	633.81	698.50	2.16639	.595	.661	1340
540.000	999.670	.02805	35.650	.01003	356.22	645.80	711.82	2.17985	.605	.671	1353
560.000	1019.670	.02750	36.365	.00983	363.39	658.00	725.34	2.19324	.615	.681	1365
580.000	1039.670	.02697	37.081	.00964	370.56	670.39	739.05	2.20656	.624	.691	1378
600.000	1059.670	.02646	37.796	.00946	377.73	682.97	752.96	2.21981	.634	.700	1390
640.000	1099.670	.02549	39.227	.00911	392.06	708.70	781.33	2.24609	.652	.719	1414
680.000	1139.670	.02460	40.657	.00879	406.39	735.16	810.44	2.27209	.670	.737	1438
720.000	1179.670	.02376	42.087	.00849	420.71	762.34	840.27	2.29781	.688	.754	1461
760.000	1219.670	.02298	43.517	.00821	435.03	790.21	870.79	2.32326	.705	.772	1484
800.000	1259.670	.02225	44.947	.00795	449.35	818.77	902.00	2.34843	.722	.788	1507

Table 27. Continued.

ETHANE ISOBAR AT P = 14.69595 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-297.014	162.656	40.699	.02457	249.573	6580.20	76.08	76.15	.61194	.368	.540	6689
-280.000	179.670	40.053	.02497	228.683	6013.33	85.31	85.37	.66586	.363	.544	6457
-260.000	199.670	39.290	.02545	205.829	5382.66	96.20	96.27	.72336	.357	.546	6171
-240.000	219.670	38.523	.02596	185.111	4800.62	107.14	107.21	.77558	.353	.548	5880
-220.000	239.670	37.747	.02649	166.489	4268.12	118.13	118.20	.82347	.349	.551	5589
-200.000	259.670	36.961	.02706	149.784	3781.99	129.19	129.26	.86778	.346	.555	5299
-180.000	279.670	36.162	.02765	134.772	3337.59	140.33	140.41	.90914	.345	.560	5013
-160.000	299.670	35.345	.02829	121.233	2930.19	151.60	151.68	.94806	.344	.567	4728
-140.000	319.670	34.505	.02898	108.957	2555.29	163.02	163.10	.98496	.345	.576	4446
-127.485	332.185	33.966	.02944	101.834	2335.42	170.26	170.34	1.00718	.345	.582	4270
-127.485	332.185	.12836	7.790	.04729	110.54	360.43	381.63	1.64223	.265	.340	811
-120.000	339.670	.12525	7.984	.04602	113.58	362.46	384.19	1.65149	.267	.341	820
-100.000	359.670	.11238	8.898	.04301	121.55	367.93	391.06	1.67113	.273	.346	845
-80.000	379.670	.11103	9.007	.04042	129.37	373.52	398.03	1.68999	.280	.352	868
-60.000	399.670	.10513	9.512	.03817	137.09	379.24	405.13	1.70820	.287	.358	890
-40.000	419.670	.09985	10.015	.03617	144.72	385.11	412.36	1.72587	.295	.366	911
-20.000	439.670	.09510	10.515	.03439	152.28	391.15	419.76	1.74308	.304	.374	931
-.000	459.670	.09080	11.013	.03279	159.79	397.35	427.32	1.75990	.313	.383	951
20.000	479.670	.08688	11.511	.03133	167.26	403.74	435.06	1.77638	.323	.392	969
40.000	499.670	.08329	12.006	.03001	174.69	410.32	442.99	1.79257	.332	.401	988
60.000	519.670	.07999	12.501	.02880	182.09	417.09	451.11	1.80851	.343	.411	1006
80.000	539.670	.07695	12.995	.02768	189.46	424.08	459.44	1.82423	.353	.421	1023
100.000	559.670	.07414	13.488	.02665	196.81	431.27	467.97	1.83976	.364	.432	1040
120.000	579.670	.07153	13.981	.02570	204.15	438.68	476.72	1.85511	.375	.443	1056
140.000	599.670	.06910	14.473	.02482	211.46	446.30	485.69	1.87032	.386	.454	1073
160.000	619.670	.06683	14.964	.02399	218.76	454.15	494.87	1.88538	.397	.465	1089
180.000	639.670	.06470	15.455	.02322	226.05	462.23	504.28	1.90033	.409	.476	1104
200.000	659.670	.06271	15.945	.02250	233.32	470.53	513.92	1.91516	.420	.487	1119
220.000	679.670	.06084	16.436	.02182	240.59	479.05	523.78	1.92989	.432	.499	1135
240.000	699.670	.05908	16.925	.02118	247.84	487.81	533.87	1.94452	.443	.510	1149
260.000	719.670	.05742	17.415	.02058	255.09	496.80	544.19	1.95906	.454	.522	1164
280.000	739.670	.05585	17.904	.02002	262.33	506.01	554.73	1.97351	.466	.533	1179
300.000	759.670	.05437	18.393	.01948	269.57	515.45	565.50	1.98788	.477	.544	1193
320.000	779.670	.05296	18.882	.01897	276.79	525.12	576.50	2.00217	.488	.555	1207
340.000	799.670	.05162	19.371	.01849	284.02	535.01	587.72	2.01638	.500	.567	1221
360.000	819.670	.05035	19.859	.01803	291.23	545.12	599.16	2.03051	.511	.578	1235
380.000	839.670	.04915	20.348	.01760	298.44	555.45	610.82	2.04456	.522	.589	1248
400.000	859.670	.04799	20.836	.01718	305.65	566.00	622.70	2.05854	.533	.599	1262
420.000	879.670	.04690	21.324	.01679	312.86	576.77	634.79	2.07245	.543	.610	1275
440.000	899.670	.04585	21.812	.01641	320.06	587.74	647.10	2.08628	.554	.621	1288
460.000	919.670	.04484	22.300	.01605	327.25	598.93	659.62	2.10004	.564	.631	1302
480.000	939.670	.04388	22.788	.01570	334.45	610.33	672.34	2.11373	.575	.641	1314
500.000	959.670	.04296	23.275	.01537	341.64	621.93	685.26	2.12734	.585	.651	1327
520.000	979.670	.04208	23.763	.01506	348.83	633.73	698.39	2.14088	.595	.661	1340
540.000	999.670	.04124	24.250	.01475	356.02	645.73	711.72	2.15434	.605	.671	1353
560.000	1019.670	.04042	24.737	.01446	363.20	657.93	725.24	2.16774	.615	.681	1365
580.000	1039.670	.03964	25.225	.01418	370.38	670.32	738.96	2.18106	.624	.691	1377
600.000	1059.670	.03889	25.712	.01391	377.56	682.90	752.87	2.19431	.634	.700	1390
640.000	1099.670	.03747	26.686	.01340	391.92	708.63	781.25	2.22060	.652	.719	1414
680.000	1139.670	.03615	27.660	.01293	406.26	735.09	810.37	2.24661	.670	.737	1438
720.000	1179.670	.03492	28.634	.01249	420.61	762.28	840.20	2.27233	.688	.755	1461
760.000	1219.670	.03378	29.607	.01208	434.94	790.15	870.73	2.29778	.705	.772	1484

ETHANE ISOBAR AT P = 20 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-297.003	162.667	40.699	.02457	249.575	6580.95	76.09	76.18	.61195	.368	.540	6689
-280.000	179.670	40.054	.02497	228.699	6014.53	85.30	85.39	.66584	.363	.544	6457
-260.000	199.670	39.291	.02545	205.847	5383.91	96.19	96.29	.72333	.357	.546	6172
-240.000	219.670	38.524	.02596	185.130	4801.92	107.13	107.23	.77555	.353	.548	5881
-220.000	239.670	37.748	.02649	166.509	4269.45	118.12	118.22	.82344	.349	.551	5590
-200.000	259.670	36.963	.02705	149.805	3783.35	129.18	129.28	.86775	.346	.555	5300
-180.000	279.670	36.163	.02765	134.794	3338.96	140.33	140.43	.90911	.345	.560	5013
-160.000	299.670	35.346	.02829	121.255	2931.59	151.59	151.70	.94803	.344	.567	4729
-140.000	319.670	34.507	.02898	108.981	2556.71	163.01	163.12	.98492	.345	.576	4447
-120.000	339.670	33.639	.02973	97.781	2210.38	174.62	174.73	1.02016	.346	.586	4166
-116.838	342.832	33.499	.02985	96.098	2158.01	176.48	176.59	1.02560	.346	.588	4122
-116.838	342.832	.17073	5.857	.06343	112.08	362.79	384.48	1.63111	.269	.348	818
-100.000	359.670	.16176	6.182	.05969	119.09	367.48	390.37	1.64951	.274	.350	839
-80.000	379.670	.15237	6.563	.05592	127.19	373.11	397.42	1.66857	.281	.355	863
-60.000	399.670	.14410	6.940	.05266	135.14	378.88	404.58	1.68695	.288	.361	886
-40.000	419.670	.13673	7.314	.04981	142.96	384.78	411.87	1.70474	.296	.368	907
-20.000	439.670	.13012	7.685	.04729	150.69	390.84	419.30	1.72205	.304	.376	928
-.000	459.670	.12414	8.055	.04502	158.34	397.07	426.90	1.73895	.313	.384	948
20.000	479.670	.11872	8.424	.04298	165.93	403.48	434.68	1.75550	.323	.393	967
40.000	499.670	.11376	8.791	.04113	173.47	410.08	442.63	1.77174	.333	.403	985
60.000	519.670	.10921	9.157	.03944	180.96	416.87	450.78	1.78773	.343	.412	1003
80.000	539.670	.10502	9.522	.03789	188.42	423.86	459.13	1.80349	.353	.422	1021
100.000	559.670	.10115	9.886	.03647	195.85	431.07	467.68	1.81905	.364	.433	1038
120.000	579.670	.09757	10.249	.03515	203.25	438.49	476.44	1.83444	.375	.444	1055
140.000	599.670	.09423	10.612	.03392	210.63	446.12	485.43	1.84967	.386	.455	1071
160.000	619.670	.09112	10.975	.03278	217.99	453.98	494.63	1.86476	.397	.466	1087
180.000	639.670	.08821	11.337	.03172	225.33	462.06	504.05	1.87973	.409	.477	1103
200.000	659.670	.08548	11.699	.03072	232.65	470.37	513.70	1.89458	.420	.488	1118
220.000	679.670	.08292	12.060	.02979	239.96	478.91	523.57	1.90932	.432	.499	1134
240.000	699.670	.08051	12.421	.02891	247.26	487.67	533.67	1.92397	.443	.511	1149
260.000	719.670	.07824	12.782	.02809	254.54	496.66	544.00	1.93852	.455	.522	1163
280.000	739.670	.07609	13.142	.02731	261.82	505.88	554.55	1.95298	.466	.533	1178
300.000	759.670	.07406	13.502	.02657	269.08	515.32	565.33	1.96736	.477	.545	1192
320.000	779.670	.07214	13.862	.02588	276.34	525.00	576.33	1.98166	.489	.556	1206
340.000	799.670	.07031	14.222	.02522	283.59	534.89	587.56	1.99588	.500	.567	1220
360.000	819.670	.06858	14.582	.02459	290.84	545.01	599.01	2.01002	.511	.578	1234
380.000	839.670	.06693	14.941	.02399	298.07	555.34	610.68	2.02408	.522	.589	1248
400.000	859.670	.06536	15.301	.02343	305.31	565.90	622.56	2.03807	.533	.600	1261
420.000	879.670	.06386	15.660	.02288	312.53	576.66	634.66	2.05198	.543	.610	1275
440.000	899.670	.06243	16.019	.02237	319.75	587.64	646.97	2.06582	.554	.621	1288
460.000	919.670	.06106	16.378	.02187	326.97	598.84	659.49	2.07958	.564	.631	1301
480.000	939.670	.05975	16.737	.02140	334.18	610.23	672.22	2.09327	.575	.642	1314
500.000	959.670	.05850	17.095	.02095	341.39	621.84	685.15	2.10689	.585	.652	1327
520.000	979.670	.05729	17.454	.02052	348.60	633.64	698.28	2.12043	.595	.662	1340
540.000	999.670	.05614	17.813	.02010	355.80	645.64	711.61	2.13390	.605	.672	1352
560.000	1019.670	.05503	18.171	.01970	363.00	657.84	725.14	2.14730	.615	.681	1365
580.000	1039.670	.05397	18.530	.01932	370.20	670.24	738.86	2.16063	.624	.691	1377
600.000	1059.670	.05294	18.888	.01895	377.39	682.82	752.77	2.17388	.634	.700	1390
640.000	1099.670	.05101	19.604	.01826	391.77	708.56	781.16	2.20018	.652	.719	1414
680.000	1139.670	.04921	20.321	.01761	406.14	735.02	810.28	2.22619	.671	.737	1438
720.000	1179.670	.04754	21.037	.01701	420.51	762.21	840.12	2.25192	.688	.755	1461
760.000	1219.670	.04597	21.753	.01645	434.86	790.09	870.65	2.27737	.705	.772	1484
800.000	1259.670	.04451	22.468	.01592	449.21	818.65	901.86	2.30255	.722	.789	1507

Table 27. Continued.

ETHANE ISOBAR AT P = 25 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.993	162.677	40.700	.02457	249.576	6581.67	76.09	76.20	.61197	.368	.540	6689
-280.000	179.670	40.055	.02497	228.715	6015.66	85.30	85.41	.66581	.363	.544	6458
-260.000	199.670	39.292	.02545	205.864	5385.10	96.19	96.31	.72331	.357	.546	6172
-240.000	219.670	38.525	.02596	185.148	4803.14	107.13	107.25	.77553	.353	.548	5882
-220.000	239.670	37.750	.02649	166.528	4270.70	118.12	118.24	.82341	.349	.551	5590
-200.000	259.670	36.964	.02705	149.824	3784.62	129.17	129.30	.86772	.346	.555	5301
-180.000	279.670	36.165	.02765	134.814	3340.26	140.32	140.45	.90908	.345	.560	5014
-160.000	299.670	35.348	.02829	121.277	2932.91	151.58	151.71	.94800	.344	.567	4730
-140.000	319.670	34.509	.02898	109.003	2558.06	163.00	163.13	.98489	.345	.575	4448
-120.000	339.670	33.641	.02973	97.805	2211.76	174.61	174.75	1.02012	.346	.586	4167
-108.649	351.021	33.133	.03018	91.862	2026.59	181.30	181.44	1.03950	.347	.593	4008
-108.649	351.021	.21000	4.762	.07861	112.97	364.58	386.62	1.62322	.273	.354	823
-100.000	359.670	.20417	4.898	.07608	116.70	367.03	389.71	1.63352	.276	.355	834
-80.000	379.670	.19201	5.208	.07101	125.10	372.72	396.83	1.65281	.282	.358	858
-60.000	399.670	.18135	5.514	.06670	133.28	378.53	404.06	1.67134	.289	.364	882
-40.000	419.670	.17191	5.817	.06297	141.29	384.47	411.40	1.68926	.297	.370	904
-20.000	439.670	.16346	6.118	.05969	149.18	390.55	418.87	1.70666	.305	.378	925
-.000	459.670	.15586	6.416	.05676	156.97	396.81	426.51	1.72364	.314	.386	945
20.000	479.670	.14896	6.713	.05414	164.68	403.23	434.31	1.74025	.323	.395	964
40.000	499.670	.14268	7.009	.05176	172.32	409.85	442.29	1.75656	.333	.404	983
60.000	519.670	.13692	7.303	.04960	179.91	416.65	450.46	1.77259	.343	.413	1001
80.000	539.670	.13163	7.597	.04762	187.45	423.66	458.83	1.78839	.354	.423	1019
100.000	559.670	.12674	7.890	.04581	194.95	430.88	467.40	1.80398	.364	.434	1036
120.000	579.670	.12222	8.182	.04413	202.42	438.31	476.19	1.81940	.375	.444	1053
140.000	599.670	.11801	8.474	.04257	209.85	445.95	485.18	1.83465	.386	.455	1070
160.000	619.670	.11409	8.765	.04113	217.27	453.82	494.40	1.84977	.398	.466	1086
180.000	639.670	.11043	9.056	.03978	224.66	461.91	503.83	1.86475	.409	.477	1102
200.000	659.670	.10700	9.346	.03853	232.02	470.23	513.49	1.87962	.420	.489	1117
220.000	679.670	.10378	9.636	.03735	239.38	478.77	523.37	1.89438	.432	.500	1133
240.000	699.670	.10075	9.925	.03624	246.71	487.54	533.48	1.90904	.443	.511	1148
260.000	719.670	.09790	10.215	.03520	254.03	496.53	543.82	1.92361	.455	.522	1162
280.000	739.670	.09521	10.504	.03422	261.34	505.76	554.38	1.93808	.466	.534	1177
300.000	759.670	.09266	10.792	.03329	268.64	515.21	565.17	1.95247	.477	.545	1192
320.000	779.670	.09025	11.081	.03241	275.93	524.88	576.18	1.96678	.489	.556	1206
340.000	799.670	.08796	11.369	.03158	283.20	534.78	587.41	1.98100	.500	.567	1220
360.000	819.670	.08578	11.658	.03079	290.47	544.90	598.87	1.99515	.511	.578	1234
380.000	839.670	.08371	11.946	.03004	297.74	555.24	610.54	2.00922	.522	.589	1247
400.000	859.670	.08174	12.234	.02933	304.99	565.80	622.43	2.02321	.533	.600	1261
420.000	879.670	.07986	12.521	.02865	312.24	576.57	634.53	2.03713	.543	.611	1274
440.000	899.670	.07807	12.809	.02800	319.48	587.55	646.85	2.05098	.554	.621	1288
460.000	919.670	.07636	13.097	.02738	326.71	598.75	659.38	2.06475	.564	.631	1301
480.000	939.670	.07472	13.384	.02679	333.95	610.15	672.11	2.07844	.575	.642	1314
500.000	959.670	.07315	13.671	.02622	341.17	621.75	685.04	2.09206	.585	.652	1327
520.000	979.670	.07164	13.959	.02568	348.39	633.56	698.18	2.10561	.595	.662	1340
540.000	999.670	.07020	14.246	.02516	355.61	645.57	711.51	2.11908	.605	.672	1352
560.000	1019.670	.06881	14.533	.02466	362.82	657.77	725.05	2.13249	.615	.681	1365
580.000	1039.670	.06748	14.820	.02418	370.03	670.16	738.77	2.14582	.624	.691	1377
600.000	1059.670	.06620	15.107	.02371	377.24	682.75	752.68	2.15907	.634	.701	1389
640.000	1099.670	.06377	15.681	.02284	391.65	708.49	781.08	2.18537	.652	.719	1414
680.000	1139.670	.06152	16.254	.02203	406.04	734.96	810.20	2.21139	.671	.737	1438
720.000	1179.670	.05943	16.827	.02128	420.42	762.15	840.05	2.23712	.688	.755	1461
760.000	1219.670	.05747	17.400	.02057	434.80	790.03	870.58	2.26258	.705	.772	1484
800.000	1259.670	.05564	17.973	.01991	449.17	818.60	901.80	2.28776	.722	.789	1507

Table 27. Continued.

Table 27. Continued.

ETHANE ISOBAR AT P = 30 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.983	162.687	40.700	.02457	249.578	6582.38	76.09	76.23	.61198	.368	.540	6690
-280.000	179.670	40.055	.02497	228.731	6016.79	85.29	85.43	.66579	.363	.543	6458
-260.000	199.670	39.293	.02545	205.882	5386.29	96.18	96.33	.72329	.357	.546	6173
-240.000	219.670	38.526	.02596	185.167	4804.37	107.12	107.27	.77551	.353	.548	5882
-220.000	239.670	37.751	.02649	166.547	4271.95	118.11	118.26	.82339	.349	.551	5591
-200.000	259.670	36.965	.02705	149.844	3785.90	129.17	129.32	.86770	.346	.555	5302
-180.000	279.670	36.166	.02765	134.835	3341.56	140.31	140.46	.90906	.345	.560	5015
-160.000	299.670	35.350	.02829	121.298	2934.23	151.57	151.73	.94797	.344	.567	4731
-140.000	319.670	34.511	.02898	109.025	2559.41	162.99	163.15	.98486	.345	.575	4449
-120.000	339.670	33.644	.02972	97.828	2213.14	174.60	174.76	1.02008	.346	.586	4168
-101.634	358.036	32.815	.03047	88.346	1917.38	185.46	185.63	1.05125	.347	.598	3910
-101.634	358.036	.24881	4.019	.09379	113.52	366.09	388.41	1.61687	.277	.360	826
-100.000	359.670	.24747	4.041	.09319	114.25	366.57	389.02	1.62019	.277	.360	828
-80.000	379.670	.23232	4.304	.08661	122.97	372.33	396.24	1.63971	.283	.362	854
-60.000	399.670	.21913	4.563	.08114	131.40	378.18	403.53	1.65841	.290	.367	878
-40.000	419.670	.20751	4.819	.07644	139.61	384.15	410.92	1.67646	.297	.373	900
-20.000	439.670	.19715	5.072	.07234	147.66	390.26	418.44	1.69397	.306	.380	922
-.000	459.670	.18785	5.323	.06871	155.59	396.54	426.11	1.71102	.314	.388	942
20.000	479.670	.17944	5.573	.06546	163.42	402.99	433.95	1.72771	.324	.396	962
40.000	499.670	.17179	5.821	.06253	171.17	409.62	441.96	1.74406	.333	.405	981
60.000	519.670	.16480	6.068	.05988	178.85	416.44	450.15	1.76014	.344	.415	999
80.000	539.670	.15837	6.314	.05746	186.48	423.46	458.54	1.77598	.354	.424	1017
100.000	559.670	.15245	6.560	.05524	194.05	430.69	467.13	1.79161	.365	.435	1035
120.000	579.670	.14697	6.804	.05319	201.59	438.13	475.93	1.80705	.375	.445	1052
140.000	599.670	.14188	7.048	.05130	209.08	445.79	484.94	1.82234	.387	.456	1068
160.000	619.670	.13714	7.292	.04954	216.55	453.66	494.17	1.83747	.398	.467	1085
180.000	639.670	.13272	7.535	.04790	223.99	461.76	503.62	1.85248	.409	.478	1101
200.000	659.670	.12858	7.777	.04638	231.41	470.08	513.29	1.86736	.420	.489	1116
220.000	679.670	.12469	8.020	.04495	238.80	478.63	523.18	1.88214	.432	.500	1132
240.000	699.670	.12104	8.262	.04361	246.17	487.41	533.30	1.89681	.443	.512	1147
260.000	719.670	.11760	8.503	.04235	253.53	496.41	543.65	1.91139	.455	.523	1162
280.000	739.670	.11436	8.745	.04116	260.87	505.64	554.22	1.92588	.466	.534	1176
300.000	759.670	.11129	8.986	.04004	268.20	515.09	565.01	1.94028	.477	.545	1191
320.000	779.670	.10838	9.227	.03898	275.52	524.77	576.03	1.95459	.489	.556	1205
340.000	799.670	.10562	9.468	.03797	282.82	534.67	587.27	1.96883	.500	.568	1219
360.000	819.670	.10301	9.708	.03702	290.12	544.80	598.73	1.98298	.511	.579	1233
380.000	839.670	.10052	9.949	.03611	297.40	555.14	610.41	1.99706	.522	.589	1247
400.000	859.670	.09814	10.189	.03525	304.68	565.70	622.30	2.01106	.533	.600	1261
420.000	879.670	.09588	10.429	.03443	311.95	576.48	634.41	2.02498	.543	.611	1274
440.000	899.670	.09373	10.669	.03365	319.21	587.46	646.73	2.03883	.554	.621	1287
460.000	919.670	.09167	10.909	.03290	326.47	598.66	659.26	2.05261	.564	.632	1301
480.000	939.670	.08969	11.149	.03219	333.71	610.06	672.00	2.06631	.575	.642	1314
500.000	959.670	.08781	11.389	.03150	340.96	621.67	684.94	2.07993	.585	.652	1326
520.000	979.670	.08600	11.628	.03085	348.19	633.48	698.08	2.09348	.595	.662	1339
540.000	999.670	.08426	11.868	.03022	355.43	645.49	711.42	2.10696	.605	.672	1352
560.000	1019.670	.08259	12.107	.02962	362.66	657.69	724.95	2.12037	.615	.682	1365
580.000	1039.670	.08099	12.347	.02904	369.88	670.09	738.68	2.13370	.624	.691	1377
600.000	1059.670	.07945	12.586	.02848	377.10	682.68	752.60	2.14696	.634	.701	1389
640.000	1099.670	.07654	13.065	.02743	391.53	708.42	781.00	2.17327	.652	.719	1414
680.000	1139.670	.07384	13.543	.02646	405.94	734.89	810.13	2.19929	.671	.737	1438
720.000	1179.670	.07132	14.021	.02555	420.35	762.08	839.97	2.22502	.688	.755	1461
760.000	1219.670	.06897	14.499	.02470	434.74	789.97	870.52	2.25049	.705	.772	1484
800.000	1259.670	.06677	14.977	.02391	449.13	818.54	901.74	2.27567	.722	.789	1507

Table 27. Continued.

ETHANE ISOBAR AT P = 35 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.973	162.697	40.701	.02457	249.579	6583.09	76.09	76.25	.61199	.368	.540	6690
-280.000	179.670	40.056	.02496	228.747	6017.91	85.29	85.45	.66577	.363	.543	6459
-260.000	199.670	39.294	.02545	205.899	5387.47	96.18	96.34	.72327	.357	.546	6173
-240.000	219.670	38.527	.02596	185.185	4805.59	107.12	107.29	.77548	.353	.548	5883
-220.000	239.670	37.752	.02649	166.566	4273.21	118.10	118.28	.82336	.349	.551	5592
-200.000	259.670	36.967	.02705	149.864	3787.17	129.16	129.33	.86767	.346	.555	5302
-180.000	279.670	36.168	.02765	134.855	3342.86	140.30	140.48	.90903	.345	.560	5016
-160.000	299.670	35.352	.02829	121.319	2935.55	151.56	151.75	.94794	.344	.567	4732
-140.000	319.670	34.513	.02897	109.047	2560.75	162.98	163.17	.98482	.345	.575	4450
-120.000	339.670	33.646	.02972	97.851	2214.51	174.59	174.78	1.02005	.346	.586	4169
-100.000	359.670	32.743	.03054	87.560	1893.43	186.43	186.63	1.05393	.348	.599	3888
-95.461	364.209	32.531	.03074	85.334	1823.76	189.15	189.35	1.06147	.348	.603	3824
-95.461	364.209	.28730	3.481	.10903	113.82	367.39	389.95	1.61156	.280	.366	829
-80.000	379.670	.27334	3.658	.10277	120.79	371.92	395.63	1.62844	.284	.366	849
-60.000	399.670	.25747	3.884	.09598	129.48	377.82	402.99	1.64732	.290	.370	874
-40.000	419.670	.24354	4.106	.09023	137.90	383.83	410.44	1.66550	.298	.375	897
-20.000	439.670	.23119	4.325	.08524	146.13	389.97	418.01	1.68312	.306	.382	919
-.000	459.670	.22013	4.543	.08086	154.21	396.27	425.71	1.70026	.315	.389	939
20.000	479.670	.21015	4.758	.07696	162.16	402.74	433.58	1.71701	.324	.398	959
40.000	499.670	.20110	4.973	.07345	170.02	409.39	441.62	1.73343	.334	.406	979
60.000	519.670	.19284	5.186	.07028	177.80	416.23	449.84	1.74955	.344	.416	997
80.000	539.670	.18526	5.398	.06740	185.50	423.26	458.25	1.76543	.354	.425	1016
100.000	559.670	.17828	5.609	.06476	193.15	430.50	466.86	1.78110	.365	.436	1033
120.000	579.670	.17182	5.820	.06233	200.76	437.95	475.67	1.79657	.376	.446	1050
140.000	599.670	.16584	6.030	.06009	208.32	445.62	484.70	1.81188	.387	.457	1067
160.000	619.670	.16027	6.239	.05801	215.84	453.50	493.94	1.82704	.398	.468	1083
180.000	639.670	.15507	6.449	.05608	223.33	461.61	503.40	1.84206	.409	.479	1100
200.000	659.670	.15021	6.657	.05428	230.79	469.94	513.08	1.85697	.421	.490	1115
220.000	679.670	.14566	6.865	.05259	238.23	478.49	522.99	1.87176	.432	.501	1131
240.000	699.670	.14137	7.073	.05101	245.64	487.27	533.12	1.88645	.443	.512	1146
260.000	719.670	.13734	7.281	.04953	253.03	496.28	543.47	1.90104	.455	.523	1161
280.000	739.670	.13354	7.488	.04813	260.41	505.52	554.05	1.91553	.466	.535	1176
300.000	759.670	.12994	7.696	.04681	267.77	514.98	564.85	1.92994	.478	.546	1190
320.000	779.670	.12654	7.903	.04557	275.12	524.66	575.88	1.94427	.489	.557	1205
340.000	799.670	.12331	8.109	.04439	282.45	534.57	587.12	1.95851	.500	.568	1219
360.000	819.670	.12025	8.316	.04327	289.77	544.69	598.59	1.97268	.511	.579	1233
380.000	839.670	.11734	8.522	.04220	297.08	555.04	610.28	1.98676	.522	.590	1246
400.000	859.670	.11456	8.729	.04119	304.38	565.60	622.18	2.00077	.533	.600	1260
420.000	879.670	.11192	8.935	.04023	311.67	576.38	634.29	2.01470	.544	.611	1274
440.000	899.670	.10940	9.141	.03931	318.95	587.37	646.62	2.02855	.554	.622	1287
460.000	919.670	.10699	9.347	.03844	326.22	598.57	659.15	2.04233	.565	.632	1300
480.000	939.670	.10468	9.553	.03760	333.49	609.98	671.89	2.05603	.575	.642	1313
500.000	959.670	.10248	9.758	.03680	340.75	621.59	684.83	2.06966	.585	.652	1326
520.000	979.670	.10036	9.964	.03603	348.00	633.40	697.98	2.08322	.595	.662	1339
540.000	999.670	.09833	10.170	.03530	355.25	645.41	711.32	2.09670	.605	.672	1352
560.000	1019.670	.09638	10.375	.03459	362.49	657.62	724.86	2.11011	.615	.682	1364
580.000	1039.670	.09451	10.581	.03391	369.73	670.02	738.59	2.12345	.624	.691	1377
600.000	1059.670	.09271	10.786	.03326	376.96	682.61	752.51	2.13671	.634	.701	1389
640.000	1099.670	.08931	11.196	.03203	391.41	708.35	780.92	2.16302	.652	.719	1414
680.000	1139.670	.08616	11.607	.03089	405.85	734.83	810.05	2.18905	.671	.737	1437
720.000	1179.670	.08322	12.017	.02983	420.28	762.02	839.91	2.21479	.688	.755	1461
760.000	1219.670	.08047	12.427	.02884	434.69	789.91	870.45	2.24025	.706	.772	1484
800.000	1259.670	.07790	12.836	.02791	449.09	818.48	901.68	2.26544	.722	.789	1507

ETHANE ISOBAR AT P = 40 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.963	162.707	40.701	.02457	249.581	6583.80	76.09	76.28	.61200	.368	.540	6690
-280.000	179.670	40.057	.02496	228.762	6019.04	85.29	85.47	.66575	.363	.543	6459
-260.000	199.670	39.295	.02545	205.916	5388.66	96.18	96.36	.72324	.357	.546	6174
-240.000	219.670	38.528	.02596	185.203	4806.81	107.11	107.30	.77546	.353	.548	5883
-220.000	239.670	37.753	.02649	166.585	4274.46	118.10	118.29	.82334	.349	.551	5592
-200.000	259.670	36.968	.02705	149.884	3788.45	129.15	129.35	.86764	.346	.555	5303
-180.000	279.670	36.169	.02765	134.876	3344.15	140.29	140.50	.90900	.345	.560	5017
-160.000	299.670	35.353	.02829	121.341	2936.87	151.56	151.76	.94791	.344	.567	4733
-140.000	319.670	34.515	.02897	109.070	2562.10	162.97	163.18	.98479	.345	.575	4451
-120.000	339.670	33.648	.02972	97.874	2215.89	174.57	174.79	1.02001	.346	.586	4170
-100.000	359.670	32.745	.03054	87.585	1894.85	186.41	186.64	1.05389	.348	.599	3889
-89.926	369.744	32.273	.03099	82.695	1741.73	192.48	192.71	1.07055	.349	.607	3747
-89.926	369.744	.32553	3.072	.12434	113.94	368.55	391.30	1.60700	.283	.371	831
-80.000	379.670	.31512	3.173	.11952	118.56	371.50	395.01	1.61849	.285	.371	844
-60.000	399.670	.29638	3.374	.11126	127.53	377.45	402.44	1.63757	.291	.373	869
-40.000	419.670	.28003	3.571	.10435	136.17	383.50	409.95	1.65590	.299	.378	893
-20.000	439.670	.26559	3.765	.09841	144.58	389.68	417.57	1.67363	.307	.384	915
-.000	459.670	.25270	3.957	.09322	152.81	396.00	425.31	1.69086	.315	.391	937
20.000	479.670	.24111	4.147	.08863	160.89	402.49	433.21	1.70768	.324	.399	957
40.000	499.670	.23061	4.336	.08452	168.86	409.16	441.28	1.72415	.334	.408	977
60.000	519.670	.22104	4.524	.08081	176.73	416.01	449.52	1.74033	.344	.417	995
80.000	539.670	.21228	4.711	.07745	184.53	423.06	457.96	1.75625	.354	.426	1014
100.000	559.670	.20422	4.897	.07437	192.26	430.32	466.58	1.77195	.365	.437	1032
120.000	579.670	.19678	5.082	.07155	199.93	437.78	475.42	1.78745	.376	.447	1049
140.000	599.670	.18989	5.266	.06895	207.55	445.45	484.46	1.80279	.387	.457	1066
160.000	619.670	.18347	5.450	.06654	215.13	453.34	493.72	1.81797	.398	.468	1082
180.000	639.670	.17750	5.634	.06431	222.67	461.46	503.19	1.83301	.409	.479	1098
200.000	659.670	.17191	5.817	.06223	230.17	469.80	512.88	1.84793	.421	.490	1114
220.000	679.670	.16667	6.000	.06028	237.65	478.36	522.80	1.86274	.432	.501	1130
240.000	699.670	.16175	6.182	.05846	245.11	487.14	532.94	1.87744	.444	.513	1145
260.000	719.670	.15712	6.364	.05674	252.54	496.16	543.30	1.89205	.455	.524	1160
280.000	739.670	.15276	6.546	.05513	259.95	505.40	553.89	1.90656	.466	.535	1175
300.000	759.670	.14863	6.728	.05362	267.34	514.86	564.70	1.92098	.478	.546	1190
320.000	779.670	.14473	6.910	.05218	274.71	524.55	575.73	1.93531	.489	.557	1204
340.000	799.670	.14103	7.091	.05082	282.07	534.46	586.98	1.94956	.500	.568	1218
360.000	819.670	.13752	7.272	.04954	289.42	544.59	598.45	1.96373	.511	.579	1232
380.000	839.670	.13418	7.453	.04831	296.75	554.94	610.14	1.97782	.522	.590	1246
400.000	859.670	.13100	7.634	.04715	304.07	565.51	622.05	1.99184	.533	.601	1260
420.000	879.670	.12797	7.814	.04605	311.38	576.29	634.17	2.00577	.544	.611	1273
440.000	899.670	.12508	7.995	.04499	318.69	587.28	646.50	2.01963	.554	.622	1287
460.000	919.670	.12232	8.175	.04399	325.98	598.49	659.04	2.03342	.565	.632	1300
480.000	939.670	.11968	8.356	.04303	333.26	609.89	671.78	2.04713	.575	.642	1313
500.000	959.670	.11715	8.536	.04211	340.54	621.51	684.73	2.06076	.585	.652	1326
520.000	979.670	.11473	8.716	.04123	347.81	633.32	697.88	2.07432	.595	.662	1339
540.000	999.670	.11241	8.896	.04038	355.07	645.33	711.23	2.08781	.605	.672	1352
560.000	1019.670	.11018	9.076	.03957	362.33	657.54	724.77	2.10122	.615	.682	1364
580.000	1039.670	.10804	9.256	.03880	369.58	669.94	738.50	2.11456	.624	.692	1377
600.000	1059.670	.10598	9.436	.03805	376.83	682.54	752.43	2.12782	.634	.701	1389
640.000	1099.670	.10209	9.795	.03664	391.30	708.28	780.84	2.15414	.652	.720	1413
680.000	1139.670	.09848	10.155	.03533	405.76	734.77	809.98	2.18017	.671	.738	1437
720.000	1179.670	.09512	10.514	.03412	420.21	761.96	839.84	2.20592	.688	.755	1461
760.000	1219.670	.09198	10.872	.03298	434.64	789.86	870.39	2.23138	.706	.772	1484
800.000	1259.670	.08904	11.231	.03192	449.06	818.43	901.62	2.25658	.722	.789	1507

Table 27. Continued.

ETHANE ISOBAR AT P = 50 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.943	162.727	40.702	.02457	249.584	6585.22	76.10	76.33	.61203	.368	.540	6691
-280.000	179.670	40.059	.02496	228.794	6021.30	85.28	85.51	.66570	.363	.543	6460
-260.000	199.670	39.297	.02545	205.950	5391.03	96.17	96.40	.72320	.358	.546	6175
-240.000	219.670	38.530	.02595	185.239	4809.26	107.10	107.34	.77541	.353	.548	5885
-220.000	239.670	37.755	.02649	166.623	4276.96	118.09	118.33	.82329	.349	.551	5594
-200.000	259.670	36.971	.02705	149.923	3791.00	129.14	129.39	.86759	.346	.555	5305
-180.000	279.670	36.172	.02765	134.917	3346.75	140.28	140.53	.90894	.345	.560	5018
-160.000	299.670	35.357	.02828	121.383	2939.51	151.54	151.80	.94785	.344	.567	4735
-140.000	319.670	34.519	.02897	109.114	2564.79	162.95	163.22	.98472	.345	.575	4453
-120.000	339.670	33.653	.02972	97.921	2218.64	174.55	174.82	1.01994	.346	.586	4173
-100.000	359.670	32.750	.03053	87.634	1897.68	186.38	186.67	1.05381	.348	.599	3891
-80.260	379.410	31.814	.03143	78.217	1602.78	198.35	198.64	1.08622	.350	.615	3612
-80.260	379.410	.40150	2.491	.15525	113.80	370.53	393.59	1.59945	.289	.381	834
-80.000	379.670	.40114	2.493	.15508	113.93	370.63	393.71	1.60139	.289	.381	834
-60.000	399.670	.37604	2.659	.14325	123.52	376.70	401.32	1.62091	.294	.381	861
-40.000	419.670	.35443	2.821	.13367	132.64	382.83	408.95	1.63955	.300	.384	886
-20.000	439.670	.33552	2.980	.12559	141.43	389.08	416.67	1.65751	.308	.389	909
-.000	459.670	.31876	3.137	.11863	149.97	395.46	424.50	1.67493	.316	.395	931
20.000	479.670	.30376	3.292	.11253	158.32	401.99	432.47	1.69190	.325	.402	952
40.000	499.670	.29024	3.445	.10711	166.52	408.70	440.60	1.70849	.335	.410	972
60.000	519.670	.27797	3.598	.10225	174.59	415.59	448.89	1.72477	.345	.419	991
80.000	539.670	.26676	3.749	.09787	182.56	422.66	457.37	1.74078	.355	.429	1010
100.000	559.670	.25648	3.899	.09388	190.45	429.94	466.04	1.75655	.365	.438	1028
120.000	579.670	.24701	4.048	.09024	198.26	437.42	474.91	1.77211	.376	.449	1046
140.000	599.670	.23825	4.197	.08689	206.01	445.12	483.98	1.78750	.387	.459	1063
160.000	619.670	.23011	4.346	.08380	213.70	453.03	493.26	1.80273	.398	.470	1080
180.000	639.670	.22254	4.494	.08093	221.34	461.16	502.76	1.81782	.410	.480	1096
200.000	659.670	.21547	4.641	.07827	228.95	469.51	512.48	1.83277	.421	.491	1112
220.000	679.670	.20885	4.788	.07578	236.51	478.09	522.42	1.84761	.432	.502	1128
240.000	699.670	.20264	4.935	.07346	244.04	486.89	532.58	1.86234	.444	.514	1143
260.000	719.670	.19680	5.081	.07128	251.55	495.91	542.96	1.87697	.455	.525	1159
280.000	739.670	.19129	5.228	.06924	259.03	505.16	553.56	1.89150	.466	.536	1174
300.000	759.670	.18610	5.374	.06731	266.48	514.63	564.39	1.90594	.478	.547	1188
320.000	779.670	.18118	5.519	.06549	273.92	524.33	575.43	1.92030	.489	.558	1203
340.000	799.670	.17653	5.665	.06377	281.33	534.25	586.70	1.93456	.500	.569	1217
360.000	819.670	.17211	5.810	.06214	288.73	544.39	598.18	1.94875	.511	.580	1231
380.000	839.670	.16791	5.956	.06059	296.11	554.75	609.89	1.96286	.522	.591	1245
400.000	859.670	.16392	6.101	.05913	303.47	565.32	621.80	1.97688	.533	.601	1259
420.000	879.670	.16011	6.246	.05773	310.83	576.11	633.93	1.99083	.544	.612	1273
440.000	899.670	.15648	6.390	.05640	318.17	587.11	646.27	2.00470	.554	.622	1286
460.000	919.670	.15302	6.535	.05513	325.50	598.31	658.82	2.01849	.565	.633	1299
480.000	939.670	.14971	6.680	.05392	332.82	609.73	671.57	2.03221	.575	.643	1312
500.000	959.670	.14654	6.824	.05276	340.13	621.35	684.53	2.04586	.585	.653	1325
520.000	979.670	.14350	6.969	.05165	347.43	633.16	697.69	2.05942	.595	.663	1338
540.000	999.670	.14059	7.113	.05059	354.72	645.18	711.04	2.07292	.605	.673	1351
560.000	1019.670	.13779	7.257	.04957	362.01	657.39	724.59	2.08634	.615	.682	1364
580.000	1039.670	.13511	7.402	.04859	369.29	669.80	738.33	2.09968	.624	.692	1376
600.000	1059.670	.13253	7.546	.04765	376.56	682.40	752.26	2.11295	.634	.701	1389
640.000	1099.670	.12765	7.834	.04588	391.09	708.15	780.68	2.13928	.653	.720	1413
680.000	1139.670	.12313	8.122	.04424	405.59	734.64	809.84	2.16532	.671	.738	1437
720.000	1179.670	.11892	8.409	.04271	420.08	761.84	839.70	2.19107	.688	.755	1461
760.000	1219.670	.11499	8.697	.04128	434.54	789.74	870.26	2.21655	.706	.773	1484
800.000	1259.670	.11131	8.984	.03995	449.00	818.32	901.50	2.24175	.722	.789	1507

Table 27. Continued.

ETHANE ISOBAR AT P = 60 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.923	162.747	40.702	.02457	249.587	6586.64	76.10	76.37	.61205	.368	.540	6691
-280.000	179.670	40.060	.02496	228.826	6023.55	85.27	85.55	.66566	.363	.543	6461
-260.000	199.670	39.299	.02545	205.985	5393.40	96.16	96.44	.72315	.358	.546	6176
-240.000	219.670	38.532	.02595	185.276	4811.71	107.09	107.38	.77536	.353	.548	5886
-220.000	239.670	37.758	.02648	166.662	4279.46	118.07	118.37	.82324	.349	.551	5595
-200.000	259.670	36.973	.02705	149.963	3793.54	129.12	129.42	.86754	.346	.555	5306
-180.000	279.670	36.175	.02764	134.958	3349.34	140.26	140.57	.90888	.345	.560	5020
-160.000	299.670	35.360	.02828	121.426	2942.15	151.52	151.83	.94778	.344	.567	4736
-140.000	319.670	34.523	.02897	109.158	2567.48	162.93	163.25	.98466	.345	.575	4455
-120.000	339.670	33.657	.02971	97.967	2221.40	174.52	174.85	1.01987	.346	.586	4175
-100.000	359.670	32.756	.03053	87.683	1900.51	186.36	186.69	1.05373	.348	.599	3894
-80.000	379.670	31.808	.03144	78.150	1601.96	198.48	198.83	1.08655	.350	.615	3610
-71.955	387.715	31.410	.03184	74.494	1487.58	203.45	203.80	1.09953	.351	.623	3495
-71.955	387.715	.47708	2.096	.18663	113.29	372.18	395.47	1.59334	.294	.391	835
-60.000	399.670	.45838	2.182	.17737	119.36	375.91	400.15	1.60684	.296	.389	852
-40.000	419.670	.43087	2.321	.16454	129.00	382.14	407.93	1.62583	.302	.390	878
-20.000	439.670	.40704	2.457	.15397	138.20	388.46	415.76	1.64405	.309	.393	902
-.000	459.670	.38609	2.590	.14499	147.08	394.90	423.68	1.66167	.317	.399	925
20.000	479.670	.36745	2.721	.13719	155.71	401.49	431.72	1.67880	.326	.406	947
40.000	499.670	.35073	2.851	.13034	164.15	408.23	439.91	1.69552	.335	.413	967
60.000	519.670	.33560	2.980	.12423	172.43	415.15	448.26	1.71190	.345	.422	987
80.000	539.670	.32184	3.107	.11875	180.58	422.26	456.78	1.72799	.355	.431	1006
100.000	559.670	.30924	3.234	.11378	188.63	429.56	465.49	1.74384	.366	.440	1025
120.000	579.670	.29766	3.360	.10926	196.58	437.07	474.40	1.75947	.377	.450	1043
140.000	599.670	.28697	3.485	.10512	204.46	444.79	483.50	1.77491	.388	.460	1060
160.000	619.670	.27707	3.609	.10130	212.27	452.71	492.81	1.79019	.399	.471	1077
180.000	639.670	.26786	3.733	.09778	220.02	460.86	502.34	1.80531	.410	.482	1094
200.000	659.670	.25927	3.857	.09451	227.71	469.23	512.08	1.82031	.421	.492	1110
220.000	679.670	.25123	3.980	.09147	235.37	477.82	522.04	1.83518	.433	.503	1126
240.000	699.670	.24370	4.103	.08862	242.98	486.63	532.22	1.84994	.444	.514	1142
260.000	719.670	.23663	4.226	.08596	250.56	495.66	542.62	1.86459	.455	.526	1157
280.000	739.670	.22997	4.348	.08347	258.11	504.92	553.24	1.87915	.467	.537	1172
300.000	759.670	.22368	4.471	.08112	265.63	514.41	564.08	1.89361	.478	.548	1187
320.000	779.670	.21774	4.593	.07890	273.12	524.11	575.14	1.90798	.489	.559	1202
340.000	799.670	.21212	4.714	.07681	280.59	534.04	586.42	1.92226	.500	.569	1216
360.000	819.670	.20679	4.836	.07483	288.04	544.19	597.92	1.93647	.511	.580	1230
380.000	839.670	.20172	4.957	.07295	295.47	554.55	609.63	1.95059	.522	.591	1244
400.000	859.670	.19690	5.079	.07117	302.88	565.13	621.56	1.96462	.533	.602	1258
420.000	879.670	.19231	5.200	.06948	310.27	575.93	633.70	1.97858	.544	.612	1272
440.000	899.670	.18794	5.321	.06787	317.66	586.93	646.05	1.99247	.554	.623	1285
460.000	919.670	.18376	5.442	.06633	325.02	598.14	658.60	2.00627	.565	.633	1299
480.000	939.670	.17977	5.563	.06486	332.38	609.56	671.37	2.02000	.575	.643	1312
500.000	959.670	.17595	5.683	.06346	339.72	621.19	684.33	2.03365	.585	.653	1325
520.000	979.670	.17230	5.804	.06212	347.06	633.01	697.49	2.04722	.595	.663	1338
540.000	999.670	.16879	5.924	.06083	354.38	645.03	710.85	2.06073	.605	.673	1351
560.000	1019.670	.16543	6.045	.05960	361.70	657.25	724.41	2.07415	.615	.683	1363
580.000	1039.670	.16220	6.165	.05842	369.00	669.66	738.16	2.08750	.624	.692	1376
600.000	1059.670	.15909	6.286	.05729	376.30	682.26	752.10	2.10078	.634	.702	1389
640.000	1099.670	.15323	6.526	.05515	390.88	708.02	780.53	2.12712	.653	.720	1413
680.000	1139.670	.14779	6.766	.05317	405.42	734.52	809.69	2.15317	.671	.738	1437
720.000	1179.670	.14273	7.006	.05132	419.95	761.72	839.57	2.17893	.688	.756	1461
760.000	1219.670	.13800	7.246	.04960	434.46	789.63	870.14	2.20442	.706	.773	1484
800.000	1259.670	.13358	7.486	.04800	448.94	818.21	901.39	2.22962	.722	.790	1507

Table 27. Continued.

ETHANE ISOBAR AT P = 70 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.903	162.767	40.703	.02457	249.590	6588.07	76.11	76.42	.61208	.368	.540	6692
-280.000	179.670	40.062	.02496	228.857	6025.81	85.26	85.59	.66562	.363	.543	6462
-260.000	199.670	39.301	.02544	206.019	5395.77	96.15	96.48	.72310	.358	.546	6177
-240.000	219.670	38.534	.02595	185.312	4814.16	107.08	107.42	.77531	.353	.548	5887
-220.000	239.670	37.760	.02648	166.700	4281.97	118.06	118.41	.82319	.349	.551	5596
-200.000	259.670	36.976	.02704	150.002	3796.09	129.11	129.46	.86748	.346	.555	5307
-180.000	279.670	36.178	.02764	134.999	3351.93	140.25	140.60	.90883	.345	.560	5021
-160.000	299.670	35.363	.02828	121.468	2944.78	151.50	151.87	.94772	.344	.567	4738
-140.000	319.670	34.527	.02896	109.203	2570.17	162.91	163.28	.98459	.345	.575	4457
-120.000	339.670	33.662	.02971	98.014	2224.15	174.50	174.88	1.01980	.346	.586	4177
-100.000	359.670	32.761	.03052	87.732	1903.33	186.33	186.72	1.05365	.348	.599	3896
-80.000	379.670	31.814	.03143	78.203	1604.87	198.44	198.85	1.08647	.350	.615	3613
-64.626	395.044	31.046	.03221	71.298	1389.10	208.00	208.42	1.11116	.352	.630	3392
-64.626	395.044	.55251	1.810	.21853	112.53	373.59	397.05	1.58819	.293	.400	836
-60.000	399.670	.54372	1.839	.21395	115.02	375.09	398.93	1.59451	.293	.399	842
-40.000	419.670	.50953	1.963	.19715	125.25	381.43	406.87	1.61390	.304	.397	870
-20.000	439.670	.48027	2.082	.18365	134.90	387.83	414.82	1.63240	.311	.399	895
-.000	459.670	.45476	2.199	.17236	144.14	394.33	422.84	1.65023	.318	.403	919
20.000	479.670	.43222	2.314	.16268	153.06	400.97	430.96	1.66753	.327	.409	942
40.000	499.670	.41209	2.427	.15423	161.75	407.76	439.21	1.68438	.336	.416	963
60.000	519.670	.39396	2.538	.14676	170.25	414.72	447.62	1.70087	.346	.424	983
80.000	539.670	.37752	2.649	.14009	178.59	421.85	456.19	1.71706	.356	.433	1003
100.000	559.670	.36251	2.759	.13408	186.80	429.18	464.94	1.73298	.366	.442	1022
120.000	579.670	.34875	2.867	.12862	194.90	436.71	473.88	1.74868	.377	.452	1040
140.000	599.670	.33607	2.976	.12364	202.90	444.45	483.02	1.76418	.388	.462	1058
160.000	619.670	.32434	3.083	.11907	210.83	452.40	492.36	1.77950	.399	.472	1075
180.000	639.670	.31344	3.190	.11485	218.68	460.56	501.92	1.79467	.410	.483	1092
200.000	659.670	.30330	3.297	.11095	226.48	468.94	511.68	1.80970	.421	.494	1108
220.000	679.670	.29382	3.403	.10733	234.22	477.55	521.66	1.82461	.433	.504	1124
240.000	699.670	.28495	3.509	.10395	241.92	486.37	531.86	1.83939	.444	.515	1140
260.000	719.670	.27662	3.615	.10079	249.57	495.42	542.28	1.85407	.456	.526	1155
280.000	739.670	.26878	3.721	.09782	257.19	504.69	552.91	1.86865	.467	.537	1171
300.000	759.670	.26139	3.826	.09504	264.77	514.18	563.77	1.88313	.478	.548	1186
320.000	779.670	.25441	3.931	.09242	272.32	523.90	574.85	1.89752	.489	.559	1200
340.000	799.670	.24781	4.035	.08995	279.85	533.83	586.14	1.91183	.500	.570	1215
360.000	819.670	.24154	4.140	.08761	287.35	543.99	597.65	1.92604	.511	.581	1229
380.000	839.670	.23560	4.244	.08539	294.83	554.36	609.38	1.94018	.522	.592	1243
400.000	859.670	.22995	4.349	.08329	302.28	564.95	621.31	1.95423	.533	.602	1257
420.000	879.670	.22457	4.453	.08130	309.72	575.75	633.47	1.96820	.544	.613	1271
440.000	899.670	.21945	4.557	.07940	317.14	586.76	645.82	1.98209	.554	.623	1285
460.000	919.670	.21455	4.661	.07759	324.55	597.98	658.39	1.99591	.565	.633	1298
480.000	939.670	.20988	4.765	.07586	331.94	609.40	671.16	2.00964	.575	.644	1311
500.000	959.670	.20541	4.868	.07421	339.32	621.03	684.13	2.02330	.585	.654	1325
520.000	979.670	.20113	4.972	.07263	346.69	632.86	697.30	2.03689	.595	.664	1338
540.000	999.670	.19702	5.076	.07112	354.04	644.88	710.67	2.05040	.605	.673	1350
560.000	1019.670	.19309	5.179	.06968	361.38	657.10	724.24	2.06383	.615	.683	1363
580.000	1039.670	.18931	5.282	.06829	368.72	669.52	737.99	2.07719	.625	.692	1376
600.000	1059.670	.18568	5.386	.06696	376.04	682.12	751.93	2.09047	.634	.702	1388
640.000	1099.670	.17882	5.592	.06445	390.67	707.89	780.38	2.11682	.653	.720	1413
680.000	1139.670	.17246	5.798	.06212	405.26	734.39	809.55	2.14288	.671	.738	1437
720.000	1179.670	.16654	6.005	.05996	419.83	761.61	839.44	2.16865	.688	.756	1461
760.000	1219.670	.16102	6.210	.05795	434.37	789.52	870.02	2.19414	.706	.773	1484
800.000	1259.670	.15586	6.416	.05607	448.89	818.11	901.27	2.21936	.722	.790	1507

Table 27. Continued.

ETHANE ISOBAR AT P = 60 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.883	162.787	40.704	.02457	249.593	6589.49	76.11	76.47	.61210	.368	.540	6692
-280.000	179.670	40.064	.02496	228.889	6028.06	85.25	85.62	.66557	.363	.543	6463
-260.000	199.670	39.303	.02544	206.053	5398.14	96.14	96.52	.72306	.358	.546	6178
-240.000	219.670	38.536	.02595	185.349	4816.60	107.07	107.45	.77527	.353	.548	5888
-220.000	239.670	37.762	.02648	166.738	4284.47	118.05	118.44	.82313	.349	.551	5598
-200.000	259.670	36.979	.02704	150.042	3798.64	129.10	129.50	.86743	.346	.555	5309
-180.000	279.670	36.181	.02764	135.040	3354.52	140.23	140.64	.90877	.345	.560	5023
-160.000	299.670	35.367	.02828	121.511	2947.42	151.48	151.90	.94766	.344	.567	4740
-140.000	319.670	34.531	.02896	109.247	2572.86	162.88	163.31	.98453	.345	.575	4459
-120.000	339.670	33.666	.02970	98.060	2226.90	174.48	174.92	1.01972	.346	.585	4179
-100.000	359.670	32.766	.03052	87.781	1906.16	186.30	186.75	1.05357	.348	.598	3898
-80.000	379.670	31.820	.03143	78.255	1607.79	198.41	198.87	1.08638	.350	.615	3616
-60.000	399.670	30.814	.03245	69.337	1329.36	210.88	211.36	1.11843	.353	.635	3328
-58.039	401.631	30.711	.03256	68.491	1303.06	212.13	212.61	1.12154	.353	.637	3299
-58.039	401.631	.62796	1.592	.25102	111.59	374.83	398.42	1.58373	.302	.409	836
-40.000	419.670	.59062	1.693	.23169	121.38	380.69	405.77	1.60325	.306	.404	862
-20.000	439.670	.55534	1.801	.21474	131.52	387.18	413.86	1.62207	.312	.405	888
-.000	459.670	.52487	1.905	.20081	141.13	393.75	421.98	1.64013	.320	.408	913
20.000	479.670	.49814	2.007	.18902	150.37	400.45	430.18	1.65760	.328	.413	936
40.000	499.670	.47439	2.108	.17882	159.32	407.28	438.51	1.67459	.337	.419	958
60.000	519.670	.45309	2.207	.16987	168.04	414.27	446.97	1.69120	.347	.427	979
80.000	539.670	.43383	2.305	.16191	176.57	421.44	455.59	1.70748	.357	.435	999
100.000	559.670	.41632	2.402	.15478	184.95	428.80	464.39	1.72348	.367	.444	1018
120.000	579.670	.40029	2.498	.14833	193.20	436.36	473.37	1.73924	.377	.454	1037
140.000	599.670	.38554	2.594	.14247	201.34	444.12	482.54	1.75480	.388	.464	1055
160.000	619.670	.37193	2.689	.13710	209.38	452.08	491.91	1.77017	.399	.474	1072
180.000	639.670	.35931	2.783	.13216	217.35	460.26	501.49	1.78539	.410	.484	1089
200.000	659.670	.34758	2.877	.12760	225.24	468.66	511.28	1.80046	.422	.495	1106
220.000	679.670	.33662	2.971	.12337	233.07	477.28	521.28	1.81539	.433	.506	1122
240.000	699.670	.32638	3.064	.11943	240.85	486.11	531.50	1.83021	.444	.516	1138
260.000	719.670	.31677	3.157	.11575	248.58	495.17	541.94	1.84492	.456	.527	1154
280.000	739.670	.30773	3.250	.11231	256.26	504.45	552.59	1.85952	.467	.538	1169
300.000	759.670	.29922	3.342	.10908	263.91	513.96	563.46	1.87402	.478	.549	1184
320.000	779.670	.29119	3.434	.10604	271.52	523.68	574.55	1.88843	.489	.560	1199
340.000	799.670	.28359	3.526	.10318	279.11	533.62	585.86	1.90275	.501	.571	1214
360.000	819.670	.27639	3.618	.10047	286.66	543.79	597.39	1.91698	.512	.582	1228
380.000	839.670	.26956	3.710	.09791	294.19	554.17	609.12	1.93113	.522	.592	1242
400.000	859.670	.26307	3.801	.09548	301.69	564.76	621.07	1.94520	.533	.603	1256
420.000	879.670	.25689	3.893	.09318	309.17	575.57	633.23	1.95918	.544	.613	1270
440.000	899.670	.25100	3.984	.09099	316.63	586.58	645.60	1.97308	.555	.624	1284
460.000	919.670	.24539	4.075	.08890	324.08	597.81	658.18	1.98691	.565	.634	1297
480.000	939.670	.24002	4.166	.08691	331.51	609.24	670.96	2.00065	.575	.644	1311
500.000	959.670	.23490	4.257	.08501	338.92	620.87	683.94	2.01432	.585	.654	1324
520.000	979.670	.22999	4.348	.08319	346.32	632.70	697.12	2.02792	.595	.664	1337
540.000	999.670	.22528	4.439	.08146	353.70	644.74	710.49	2.04143	.605	.674	1350
560.000	1019.670	.22077	4.530	.07979	361.07	656.96	724.06	2.05487	.615	.683	1363
580.000	1039.670	.21644	4.620	.07819	368.44	669.38	737.82	2.06824	.625	.693	1375
600.000	1059.670	.21228	4.711	.07666	375.79	681.99	751.77	2.08153	.634	.702	1388
640.000	1099.670	.20442	4.892	.07378	390.46	707.76	780.23	2.10788	.653	.721	1413
680.000	1139.670	.19714	5.073	.07110	405.10	734.27	809.42	2.13395	.671	.739	1437
720.000	1179.670	.19036	5.253	.06862	419.70	761.49	839.31	2.15973	.688	.755	1461
760.000	1219.670	.18404	5.433	.06631	434.28	789.41	869.90	2.18523	.706	.773	1484
800.000	1259.670	.17814	5.614	.06415	448.84	818.00	901.16	2.21045	.722	.790	1507

Table 27. Continued.

ETHANE ISOBAR AT P = 90 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.863	162.807	40.705	.02457	249.596	6590.91	76.11	76.52	.61212	.368	.540	6693
-280.000	179.670	40.065	.02496	228.920	6030.31	85.25	85.66	.66553	.363	.543	6464
-260.000	199.670	39.304	.02544	206.087	5400.51	96.13	96.55	.72301	.358	.546	6179
-240.000	219.670	38.538	.02595	185.385	4819.05	107.06	107.49	.77522	.353	.548	5889
-220.000	239.670	37.765	.02648	166.776	4286.97	118.04	118.48	.82308	.349	.551	5599
-200.000	259.670	36.981	.02704	150.081	3801.19	129.08	129.53	.86738	.346	.555	5310
-180.000	279.670	36.184	.02764	135.081	3357.11	140.21	140.68	.90871	.345	.560	5024
-160.000	299.670	35.370	.02827	121.553	2950.06	151.46	151.94	.94760	.344	.567	4741
-140.000	319.670	34.534	.02896	109.291	2575.55	162.86	163.35	.98446	.345	.575	4460
-120.000	339.670	33.671	.02970	98.106	2229.65	174.45	174.95	1.01965	.346	.585	4181
-100.000	359.670	32.771	.03051	87.830	1908.98	186.27	186.78	1.05350	.348	.598	3901
-80.000	379.670	31.826	.03142	78.307	1610.71	198.38	198.90	1.08629	.350	.614	3618
-60.000	399.670	30.821	.03245	69.394	1332.40	210.84	211.38	1.11832	.353	.635	3330
-52.036	407.634	30.400	.03290	65.984	1226.67	215.93	216.47	1.13094	.355	.644	3214
-52.036	407.634	.70355	1.421	.28413	110.51	375.92	399.61	1.57979	.307	.418	835
-40.000	419.670	.67439	1.483	.26841	117.38	379.92	404.63	1.59355	.308	.413	853
-20.000	439.670	.63239	1.581	.24737	128.05	386.51	412.87	1.61271	.314	.411	881
-.000	459.670	.59650	1.676	.23043	138.07	393.16	421.10	1.63102	.321	.413	907
20.000	479.670	.56525	1.769	.21627	147.64	399.91	429.39	1.64868	.329	.417	931
40.000	499.670	.53764	1.860	.20414	156.86	406.79	437.79	1.66583	.338	.423	953
60.000	519.670	.51299	1.949	.19357	165.81	413.83	446.31	1.68255	.347	.430	975
80.000	539.670	.49080	2.038	.18424	174.54	421.03	454.99	1.69893	.357	.438	995
100.000	559.670	.47066	2.125	.17591	183.09	428.42	463.83	1.71501	.367	.446	1015
120.000	579.670	.45228	2.211	.16841	191.49	436.00	472.85	1.73084	.378	.456	1034
140.000	599.670	.43541	2.297	.16160	199.76	443.78	482.05	1.74646	.389	.465	1052
160.000	619.670	.41986	2.382	.15540	207.93	451.76	491.46	1.76188	.400	.475	1070
180.000	639.670	.40547	2.466	.14970	216.00	459.96	501.06	1.77714	.411	.486	1087
200.000	659.670	.39210	2.550	.14445	224.00	468.38	510.88	1.79225	.422	.496	1104
220.000	679.670	.37964	2.634	.13959	231.92	477.01	520.90	1.80722	.433	.507	1120
240.000	699.670	.36799	2.717	.13507	239.78	485.86	531.14	1.82207	.445	.517	1137
260.000	719.670	.35708	2.801	.13086	247.58	494.93	541.60	1.83680	.456	.528	1152
280.000	739.670	.34683	2.883	.12693	255.34	504.22	552.27	1.85143	.467	.539	1168
300.000	759.670	.33717	2.966	.12324	263.05	513.73	563.16	1.86595	.478	.550	1183
320.000	779.670	.32807	3.048	.11977	270.73	523.47	574.26	1.88038	.490	.561	1198
340.000	799.670	.31946	3.130	.11651	278.36	533.42	585.59	1.89472	.501	.571	1213
360.000	819.670	.31131	3.212	.11343	285.97	543.59	597.12	1.90897	.512	.582	1227
380.000	839.670	.30359	3.294	.11051	293.55	553.97	608.87	1.92313	.523	.593	1242
400.000	859.670	.29624	3.376	.10775	301.10	564.58	620.83	1.93721	.533	.603	1256
420.000	879.670	.28926	3.457	.10513	308.62	575.39	633.00	1.95120	.544	.614	1270
440.000	899.670	.28261	3.538	.10264	316.12	586.41	645.38	1.96512	.555	.624	1283
460.000	919.670	.27627	3.620	.10027	323.61	597.64	657.97	1.97895	.565	.634	1297
480.000	939.670	.27021	3.701	.09801	331.07	609.08	670.75	1.99271	.575	.644	1310
500.000	959.670	.26442	3.782	.09586	338.52	620.72	683.74	2.00638	.585	.654	1324
520.000	979.670	.25888	3.863	.09380	345.95	632.55	696.93	2.01998	.595	.664	1337
540.000	999.670	.25357	3.944	.09183	353.36	644.59	710.31	2.03351	.605	.674	1350
560.000	1019.670	.24848	4.025	.08994	360.76	656.82	723.89	2.04695	.615	.684	1363
580.000	1039.670	.24359	4.105	.08814	368.15	669.24	737.66	2.06032	.625	.693	1375
600.000	1059.670	.23890	4.186	.08640	375.53	681.85	751.61	2.07362	.634	.703	1388
640.000	1099.670	.23004	4.347	.08313	390.25	707.64	780.08	2.09999	.653	.721	1413
680.000	1139.670	.22183	4.508	.08011	404.93	734.15	809.28	2.12607	.671	.739	1437
720.000	1179.670	.21419	4.669	.07731	419.58	761.38	839.18	2.15186	.689	.756	1461
760.000	1219.670	.20707	4.829	.07469	434.20	789.30	869.78	2.17736	.706	.773	1484
800.000	1259.670	.20042	4.990	.07225	448.79	817.90	901.05	2.20259	.723	.790	1507

Table 27. Continued.

Table 27. Continued.

ETHANE ISOBAR AT P = 100 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.843	162.827	40.705	.02457	249.600	6592.34	76.12	76.57	.61215	.368	.540	6694
-280.000	179.670	40.067	.02496	228.952	6032.57	85.24	85.70	.66549	.363	.543	6465
-260.000	199.670	39.306	.02544	206.122	5402.88	96.12	96.59	.72297	.358	.546	6181
-240.000	219.670	38.540	.02595	185.421	4821.49	107.05	107.53	.77517	.353	.548	5891
-220.000	239.670	37.767	.02648	166.814	4289.47	118.03	118.52	.82303	.349	.551	5600
-200.000	259.670	36.984	.02704	150.121	3803.73	129.07	129.57	.86732	.346	.555	5312
-180.000	279.670	36.187	.02763	135.122	3359.70	140.20	140.71	.90866	.345	.560	5026
-160.000	299.670	35.374	.02827	121.596	2952.69	151.45	151.97	.94754	.344	.566	4743
-140.000	319.670	34.538	.02895	109.335	2578.24	162.84	163.38	.98439	.345	.575	4462
-120.000	339.670	33.675	.02970	98.153	2232.40	174.43	174.98	1.01958	.346	.585	4183
-100.000	359.670	32.777	.03051	87.879	1911.80	186.24	186.81	1.05342	.348	.598	3903
-80.000	379.670	31.833	.03141	78.360	1613.62	198.34	198.92	1.08620	.350	.614	3621
-60.000	399.670	30.829	.03244	69.451	1335.42	210.80	211.40	1.11822	.353	.634	3333
-46.507	413.163	30.107	.03321	63.715	1157.99	219.46	220.07	1.13956	.356	.651	3135
-46.507	413.163	.77941	1.283	.31790	109.32	376.90	400.65	1.57625	.310	.427	834
-40.000	419.670	.76111	1.314	.30763	113.23	379.12	403.45	1.58456	.311	.423	844
-20.000	439.670	.71159	1.405	.28171	124.49	385.82	411.85	1.60411	.316	.418	874
-.000	459.670	.66976	1.493	.26130	134.95	392.55	420.20	1.62269	.322	.418	900
20.000	479.670	.63362	1.578	.24448	144.86	399.37	428.59	1.64056	.330	.421	925
40.000	499.670	.60190	1.661	.23023	154.36	406.30	437.06	1.65786	.339	.426	948
60.000	519.670	.57372	1.743	.21790	163.55	413.37	445.65	1.67471	.348	.433	970
80.000	539.670	.54843	1.823	.20708	172.48	420.61	454.38	1.69119	.358	.440	991
100.000	559.670	.52556	1.903	.19746	181.21	428.03	463.27	1.70736	.368	.449	1011
120.000	579.670	.50473	1.981	.18885	189.77	435.64	472.32	1.72326	.378	.457	1031
140.000	599.670	.48567	2.059	.18106	198.18	443.44	481.57	1.73894	.389	.467	1049
160.000	619.670	.46812	2.136	.17397	206.47	451.45	491.00	1.75441	.400	.477	1067
180.000	639.670	.45191	2.213	.16748	214.65	459.66	500.64	1.76971	.411	.487	1085
200.000	659.670	.43686	2.289	.16151	222.75	468.09	510.48	1.78486	.422	.497	1102
220.000	679.670	.42286	2.365	.15600	230.76	476.74	520.53	1.79987	.434	.508	1119
240.000	699.670	.40979	2.440	.15088	238.71	485.60	530.79	1.81474	.445	.518	1135
260.000	719.670	.39755	2.515	.14612	246.59	494.68	541.26	1.82950	.456	.529	1151
280.000	739.670	.38606	2.590	.14168	254.42	503.98	551.95	1.84415	.467	.540	1166
300.000	759.670	.37525	2.665	.13752	262.19	513.51	562.85	1.85870	.479	.551	1182
320.000	779.670	.36506	2.739	.13361	269.93	523.25	573.97	1.87315	.490	.561	1197
340.000	799.670	.35543	2.813	.12994	277.62	533.21	585.31	1.88750	.501	.572	1212
360.000	819.670	.34632	2.887	.12647	285.28	543.39	596.86	1.90177	.512	.583	1226
380.000	839.670	.33769	2.961	.12319	292.90	553.78	608.62	1.91594	.523	.593	1241
400.000	859.670	.32949	3.035	.12009	300.50	564.39	620.59	1.93003	.534	.604	1255
420.000	879.670	.32169	3.109	.11715	308.07	575.21	632.77	1.94404	.544	.614	1269
440.000	899.670	.31427	3.182	.11436	315.61	586.24	645.16	1.95797	.555	.625	1283
460.000	919.670	.30719	3.255	.11170	323.13	597.48	657.76	1.97181	.565	.635	1296
480.000	939.670	.30043	3.329	.10917	330.63	608.92	670.55	1.98558	.575	.645	1310
500.000	959.670	.29398	3.402	.10675	338.11	620.56	683.55	1.99926	.586	.655	1323
520.000	979.670	.28780	3.475	.10445	345.58	632.40	696.74	2.01287	.596	.665	1336
540.000	999.670	.28188	3.548	.10224	353.02	644.44	710.13	2.02640	.605	.674	1349
560.000	1019.670	.27621	3.620	.10013	360.45	656.68	723.72	2.03986	.615	.684	1362
580.000	1039.670	.27076	3.693	.09811	367.87	669.10	737.49	2.05323	.625	.693	1375
600.000	1059.670	.26554	3.766	.09617	375.27	681.72	751.45	2.06654	.634	.703	1388
640.000	1099.670	.25567	3.911	.09252	390.04	707.51	779.93	2.09292	.653	.721	1412
680.000	1139.670	.24653	4.056	.08915	404.77	734.03	809.14	2.11900	.671	.739	1437
720.000	1179.670	.23803	4.201	.08601	419.46	761.26	839.06	2.14480	.689	.757	1461
760.000	1219.670	.23011	4.346	.08310	434.11	789.19	869.66	2.17031	.706	.774	1484
800.000	1259.670	.22270	4.490	.08038	448.74	817.79	900.94	2.19555	.723	.790	1507

Table 27. Continued.

ETHANE ISOBAR AT P = 120 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.803	162.867	40.707	.02457	249.606	6595.19	76.13	76.67	.61220	.368	.540	6695
-280.000	179.670	40.070	.02496	229.015	6037.07	85.22	85.78	.66540	.363	.543	6467
-260.000	199.670	39.310	.02544	206.190	5407.62	96.10	96.67	.72288	.358	.546	6183
-240.000	219.670	38.544	.02594	185.494	4826.38	107.03	107.60	.77507	.353	.548	5893
-220.000	239.670	37.772	.02647	166.890	4294.47	118.00	118.59	.82293	.349	.551	5603
-200.000	259.670	36.989	.02703	150.200	3808.82	129.04	129.64	.86722	.346	.555	5315
-180.000	279.670	36.193	.02763	135.204	3364.88	140.17	140.78	.90854	.345	.560	5029
-160.000	299.670	35.380	.02826	121.681	2957.96	151.41	152.04	.94742	.344	.566	4746
-140.000	319.670	34.546	.02895	109.424	2583.61	162.80	163.44	.98426	.345	.575	4466
-120.000	339.670	33.684	.02969	98.245	2237.89	174.38	175.04	1.01944	.346	.585	4187
-100.000	359.670	32.787	.03050	87.976	1917.44	186.18	186.86	1.05326	.348	.598	3907
-80.000	379.670	31.845	.03140	78.464	1619.44	198.27	198.97	1.08602	.350	.614	3626
-60.000	399.670	30.844	.03242	69.564	1341.47	210.72	211.44	1.11802	.353	.634	3339
-40.000	419.670	29.762	.03360	61.137	1081.50	223.62	224.37	1.14958	.357	.660	3044
-36.568	423.102	29.567	.03382	59.727	1038.55	225.89	226.64	1.15497	.358	.665	2992
-36.568	423.102	.93218	1.073	.38752	106.69	378.57	402.41	1.57007	.318	.445	831
-20.000	439.670	.87719	1.140	.35620	117.06	384.37	409.70	1.58859	.320	.434	858
-.000	459.670	.82159	1.217	.32719	128.51	391.29	418.34	1.60779	.325	.430	887
20.000	479.670	.77446	1.291	.30405	139.17	398.24	426.94	1.62610	.332	.430	914
40.000	499.670	.73364	1.363	.28486	149.28	405.29	435.57	1.64374	.340	.434	938
60.000	519.670	.69775	1.433	.26853	158.97	412.45	444.30	1.66086	.349	.439	962
80.000	539.670	.66580	1.502	.25438	168.33	419.77	453.14	1.67755	.359	.446	983
100.000	559.670	.63710	1.570	.24193	177.42	427.25	462.13	1.69390	.369	.453	1004
120.000	579.670	.61110	1.636	.23087	186.30	434.91	471.27	1.70995	.379	.461	1024
140.000	599.670	.58740	1.702	.22094	194.99	442.76	480.59	1.72575	.390	.470	1044
160.000	619.670	.56568	1.768	.21195	203.53	450.80	490.09	1.74133	.401	.480	1062
180.000	639.670	.54567	1.833	.20377	211.94	459.06	499.78	1.75673	.412	.490	1080
200.000	659.670	.52716	1.897	.19628	220.24	467.52	509.67	1.77196	.423	.500	1098
220.000	679.670	.50997	1.961	.18938	228.44	476.19	519.77	1.78703	.434	.510	1115
240.000	699.670	.49395	2.024	.18301	236.55	485.08	530.07	1.80197	.445	.520	1131
260.000	719.670	.47899	2.088	.17709	244.59	494.19	540.58	1.81679	.456	.531	1148
280.000	739.670	.46496	2.151	.17158	252.56	503.52	551.31	1.83148	.468	.542	1163
300.000	759.670	.45178	2.213	.16643	260.47	513.06	562.24	1.84607	.479	.552	1179
320.000	779.670	.43938	2.276	.16161	268.33	522.82	573.39	1.86056	.490	.563	1194
340.000	799.670	.42767	2.338	.15708	276.13	532.80	584.76	1.87495	.501	.573	1209
360.000	819.670	.41660	2.400	.15282	283.90	542.99	596.33	1.88925	.512	.584	1224
380.000	839.670	.40612	2.462	.14880	291.62	553.40	608.12	1.90345	.523	.595	1239
400.000	859.670	.39618	2.524	.14500	299.31	564.02	620.11	1.91757	.534	.605	1253
420.000	879.670	.38673	2.586	.14139	306.97	574.86	632.32	1.93160	.544	.615	1267
440.000	899.670	.37774	2.647	.13798	314.59	585.90	644.72	1.94555	.555	.626	1281
460.000	919.670	.36918	2.709	.13473	322.19	597.15	657.34	1.95942	.565	.636	1295
480.000	939.670	.36100	2.770	.13164	329.76	608.60	670.15	1.97320	.576	.646	1309
500.000	959.670	.35320	2.831	.12870	337.31	620.25	683.16	1.98690	.586	.656	1322
520.000	979.670	.34573	2.892	.12589	344.84	632.10	696.37	2.00053	.596	.665	1335
540.000	999.670	.33859	2.953	.12320	352.35	644.15	709.78	2.01407	.606	.675	1349
560.000	1019.670	.33174	3.014	.12064	359.83	656.39	723.38	2.02754	.615	.685	1362
580.000	1039.670	.32517	3.075	.11818	367.31	668.83	737.16	2.04093	.625	.694	1374
600.000	1059.670	.31887	3.136	.11582	374.76	681.45	751.14	2.05424	.634	.703	1387
640.000	1099.670	.30698	3.258	.11139	389.63	707.26	779.64	2.08065	.653	.722	1412
680.000	1139.670	.29596	3.379	.10729	404.45	733.79	808.87	2.10675	.671	.740	1437
720.000	1179.670	.28572	3.500	.10350	419.22	761.03	838.80	2.13257	.689	.757	1461
760.000	1219.670	.27619	3.621	.09997	433.95	788.97	869.43	2.15809	.706	.774	1484

Table 27. Continued.

ETHANE ISOBAR AT P = 140 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.762	162.908	40.709	.02456	249.612	6598.04	76.13	76.77	.61224	.368	.540	6696
-280.000	179.670	40.074	.02495	229.078	6041.57	85.21	85.85	.66531	.363	.543	6469
-260.000	199.670	39.314	.02544	206.259	5412.35	96.08	96.74	.72278	.358	.546	6185
-240.000	219.670	38.549	.02594	185.567	4831.27	107.01	107.68	.77498	.353	.548	5896
-220.000	239.670	37.776	.02647	166.966	4299.47	117.98	118.66	.82283	.349	.551	5606
-200.000	259.670	36.994	.02703	150.279	3813.91	129.01	129.71	.86711	.346	.554	5318
-180.000	279.670	36.199	.02762	135.285	3370.05	140.14	140.85	.90843	.345	.560	5032
-160.000	299.670	35.387	.02826	121.765	2963.23	151.37	152.11	.94730	.344	.566	4750
-140.000	319.670	34.554	.02894	109.512	2588.98	162.76	163.51	.98413	.345	.574	4470
-120.000	339.670	33.693	.02968	98.338	2243.38	174.33	175.10	1.01929	.346	.585	4191
-100.000	359.670	32.798	.03049	88.074	1923.08	186.13	186.92	1.05310	.348	.598	3912
-80.000	379.670	31.857	.03139	78.568	1625.25	198.21	199.02	1.08584	.350	.613	3631
-60.000	399.670	30.858	.03241	69.677	1347.51	210.64	211.48	1.11782	.353	.633	3345
-40.000	419.670	29.781	.03358	61.262	1087.83	223.52	224.39	1.14934	.357	.659	3051
-27.777	431.893	29.070	.03440	56.290	937.19	231.68	232.57	1.16854	.359	.679	2864
-27.777	431.893	1.08685	.920	.46009	103.83	379.96	403.81	1.56474	.324	.462	828
-20.000	439.670	1.05400	.949	.44011	109.17	382.81	407.40	1.57460	.324	.455	841
-.000	459.670	.98141	1.019	.39944	121.78	389.95	416.37	1.59454	.328	.444	873
20.000	479.670	.92127	1.085	.36827	133.29	397.07	425.21	1.61337	.335	.441	902
40.000	499.670	.87000	1.149	.34306	144.06	404.24	434.04	1.63139	.342	.442	928
60.000	519.670	.82544	1.211	.32199	154.29	411.50	442.91	1.64880	.351	.446	953
80.000	539.670	.78613	1.272	.30397	164.10	418.90	451.88	1.66573	.360	.451	975
100.000	559.670	.75106	1.331	.28830	173.58	426.45	460.96	1.68227	.370	.458	997
120.000	579.670	.71948	1.390	.27448	182.79	434.16	470.20	1.69848	.380	.466	1018
140.000	599.670	.69083	1.448	.26217	191.77	442.06	479.59	1.71441	.391	.474	1038
160.000	619.670	.66467	1.505	.25110	200.57	450.16	489.16	1.73010	.401	.483	1057
180.000	639.670	.64065	1.561	.24107	209.22	458.45	498.91	1.74559	.412	.492	1076
200.000	659.670	.61849	1.617	.23192	217.72	466.94	508.86	1.76090	.423	.502	1093
220.000	679.670	.59797	1.672	.22354	226.11	475.65	519.00	1.77605	.434	.512	1111
240.000	699.670	.57889	1.727	.21581	234.39	484.57	529.35	1.79105	.446	.522	1128
260.000	719.670	.56109	1.782	.20866	242.59	493.70	539.90	1.80592	.457	.533	1144
280.000	739.670	.54444	1.837	.20202	250.70	503.05	550.66	1.82067	.468	.543	1161
300.000	759.670	.52882	1.891	.19584	258.74	512.61	561.63	1.83531	.479	.554	1176
320.000	779.670	.51414	1.945	.19005	266.72	522.39	572.81	1.84983	.490	.564	1192
340.000	799.670	.50029	1.999	.18463	274.65	532.39	584.21	1.86426	.501	.575	1207
360.000	819.670	.48722	2.052	.17953	282.52	542.60	595.81	1.87859	.512	.585	1222
380.000	839.670	.47485	2.106	.17473	290.34	553.02	607.62	1.89282	.523	.596	1237
400.000	859.670	.46313	2.159	.17020	298.12	563.66	619.63	1.90697	.534	.606	1252
420.000	879.670	.45200	2.212	.16591	305.86	574.50	631.86	1.92103	.545	.616	1266
440.000	899.670	.44142	2.265	.16185	313.57	585.56	644.29	1.93500	.555	.627	1280
460.000	919.670	.43134	2.318	.15799	321.24	596.82	656.92	1.94888	.565	.637	1294
480.000	939.670	.42173	2.371	.15433	328.89	608.28	669.75	1.96268	.576	.647	1308
500.000	959.670	.41256	2.424	.15084	336.51	619.94	682.78	1.97640	.586	.656	1321
520.000	979.670	.40380	2.477	.14751	344.10	631.80	696.01	1.99004	.596	.666	1335
540.000	999.670	.39541	2.529	.14433	351.67	643.86	709.43	2.00360	.606	.676	1348
560.000	1019.670	.38737	2.582	.14130	359.22	656.11	723.04	2.01709	.615	.685	1361
580.000	1039.670	.37967	2.634	.13839	366.74	668.56	736.84	2.03049	.625	.695	1374
600.000	1059.670	.37227	2.686	.13561	374.25	681.19	750.83	2.04382	.634	.704	1387
640.000	1099.670	.35833	2.791	.13038	389.22	707.01	779.35	2.07024	.653	.722	1412
680.000	1139.670	.34543	2.895	.12555	404.12	733.55	808.60	2.09636	.671	.740	1436
720.000	1179.670	.33345	2.999	.12107	418.97	760.81	838.56	2.12220	.689	.758	1461
760.000	1219.670	.32228	3.103	.11692	433.78	788.76	869.20	2.14774	.706	.775	1484
800.000	1259.670	.31186	3.207	.11305	448.54	817.38	900.51	2.17300	.723	.791	1508

Table 27. Continued.

ETHANE ISOBAR AT P = 150 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.722	162.948	40.710	.02456	249.619	6600.89	76.14	76.87	.61229	.368	.540	6697
-280.000	179.670	40.077	.02495	229.141	6046.07	85.19	85.93	.66522	.363	.543	6471
-260.000	199.670	39.317	.02543	206.327	5417.09	96.07	96.82	.72269	.358	.546	6187
-240.000	219.670	38.553	.02594	185.639	4836.16	106.99	107.75	.77488	.353	.548	5898
-220.000	239.670	37.781	.02647	167.041	4304.47	117.95	118.74	.82273	.349	.551	5608
-200.000	259.670	37.000	.02703	150.358	3819.00	128.99	129.79	.86700	.346	.554	5320
-180.000	279.670	36.205	.02762	135.367	3375.23	140.10	140.92	.90832	.345	.559	5035
-160.000	299.670	35.394	.02825	121.850	2968.49	151.34	152.17	.94718	.344	.566	4753
-140.000	319.670	34.561	.02893	109.600	2594.34	162.72	163.57	.98400	.345	.574	4474
-120.000	339.670	33.702	.02967	98.430	2248.86	174.28	175.16	1.01915	.346	.585	4195
-100.000	359.670	32.808	.03048	88.171	1928.70	186.07	186.98	1.05294	.348	.597	3916
-80.000	379.670	31.870	.03138	78.672	1631.06	198.14	199.07	1.08567	.350	.613	3636
-60.000	399.670	30.873	.03239	69.790	1353.54	210.56	211.52	1.11762	.353	.633	3351
-40.000	419.670	29.799	.03356	61.387	1094.15	223.42	224.42	1.14911	.357	.658	3057
-20.000	439.670	28.616	.03495	53.314	850.97	236.88	237.92	1.18052	.361	.693	2750
-19.861	439.809	28.607	.03496	53.258	849.34	236.98	238.01	1.18074	.361	.694	2748
-19.861	439.809	1.2439	.8039	.5358	100.80	381.12	404.93	1.56002	.331	.481	823
-.000	459.670	1.1505	.8692	.4793	114.73	388.53	414.28	1.58242	.332	.461	858
20.000	479.670	1.0748	.9304	.4378	127.21	395.84	423.41	1.60185	.337	.453	889
40.000	499.670	1.0115	.9887	.4052	138.71	403.15	432.44	1.62031	.344	.451	917
60.000	519.670	.9571	1.0448	.3785	149.52	410.53	441.48	1.63804	.352	.453	943
80.000	539.670	.9096	1.0994	.3560	159.80	418.01	450.58	1.65522	.361	.457	967
100.000	559.670	.8676	1.1526	.3367	169.69	425.63	459.78	1.67196	.371	.463	990
120.000	579.670	.8300	1.2049	.3198	179.24	433.41	469.11	1.68833	.381	.470	1012
140.000	599.670	.7960	1.2563	.3048	188.53	441.36	478.58	1.70440	.391	.478	1032
160.000	619.670	.7651	1.3070	.2915	197.60	449.50	488.22	1.72022	.402	.486	1052
180.000	639.670	.7369	1.3571	.2794	206.47	457.83	498.04	1.73581	.413	.495	1071
200.000	659.670	.7109	1.4067	.2685	215.19	466.36	508.04	1.75120	.424	.505	1089
220.000	679.670	.6869	1.4559	.2585	223.77	475.10	518.23	1.76642	.435	.515	1107
240.000	699.670	.6646	1.5046	.2493	232.23	484.05	528.63	1.78149	.446	.525	1124
260.000	719.670	.6439	1.5531	.2409	240.58	493.20	539.22	1.79642	.457	.535	1141
280.000	739.670	.6245	1.6012	.2330	248.84	502.58	550.02	1.81122	.468	.545	1158
300.000	759.670	.6064	1.6491	.2257	257.02	512.16	561.02	1.82590	.480	.555	1174
320.000	779.670	.5893	1.6968	.2189	265.12	521.96	572.23	1.84047	.491	.566	1190
340.000	799.670	.5733	1.7442	.2126	273.16	531.98	583.65	1.85493	.502	.576	1205
360.000	819.670	.5582	1.7915	.2066	281.13	542.20	595.28	1.86929	.513	.587	1220
380.000	839.670	.5439	1.8386	.2010	289.06	552.64	607.12	1.88356	.523	.597	1235
400.000	859.670	.5304	1.8855	.1957	296.93	563.29	619.16	1.89773	.534	.607	1250
420.000	879.670	.5175	1.9323	.1907	304.76	574.15	631.40	1.91181	.545	.617	1264
440.000	899.670	.5053	1.9790	.1860	312.55	585.22	643.85	1.92580	.555	.628	1279
460.000	919.670	.4937	2.0256	.1815	320.30	596.49	656.50	1.93971	.566	.638	1293
480.000	939.670	.4826	2.0720	.1772	328.02	607.96	669.35	1.95353	.576	.647	1307
500.000	959.670	.4721	2.1183	.1732	335.70	619.64	682.40	1.96727	.586	.657	1320
520.000	979.670	.4620	2.1646	.1693	343.36	631.51	695.64	1.98092	.596	.667	1334
540.000	999.670	.4523	2.2108	.1656	350.99	643.57	709.07	1.99450	.606	.677	1347
560.000	1019.670	.4431	2.2569	.1621	358.60	655.83	722.70	2.00800	.616	.686	1360
580.000	1039.670	.4342	2.3029	.1587	366.18	668.28	736.51	2.02141	.625	.695	1373
600.000	1059.670	.4257	2.3488	.1555	373.74	680.92	750.51	2.03475	.635	.705	1386
640.000	1099.670	.4097	2.4405	.1495	388.80	706.76	779.06	2.06120	.653	.723	1411
680.000	1139.670	.3949	2.5320	.1439	403.80	733.32	808.33	2.08734	.671	.741	1436
720.000	1179.670	.3812	2.6233	.1387	418.73	760.58	838.31	2.11319	.689	.758	1461
760.000	1219.670	.3684	2.7144	.1340	433.61	788.54	868.97	2.13874	.706	.775	1484
800.000	1259.670	.3565	2.8054	.1295	448.44	817.18	900.29	2.16402	.723	.791	1508

Table 27. Continued.

ETHANE ISOBAR AT P = 180 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.682	162.988	40.712	.02455	249.624	6603.68	76.15	76.97	.61234	.368	.540	6698
-280.000	179.670	40.080	.02495	229.203	6050.57	85.18	86.01	.66514	.363	.543	6473
-260.000	199.670	39.321	.02543	206.396	5421.82	96.05	96.90	.72260	.358	.546	6189
-240.000	219.670	38.557	.02594	185.712	4841.04	106.96	107.83	.77479	.353	.548	5900
-220.000	239.670	37.786	.02647	167.117	4309.46	117.93	118.81	.82263	.349	.551	5611
-200.000	259.670	37.005	.02702	150.436	3824.09	128.96	129.86	.86690	.347	.554	5323
-180.000	279.670	36.211	.02762	135.449	3380.40	140.07	140.99	.90820	.345	.559	5039
-160.000	299.670	35.401	.02825	121.935	2973.75	151.30	152.24	.94705	.345	.566	4757
-140.000	319.670	34.569	.02893	109.688	2599.70	162.68	163.64	.98387	.345	.574	4477
-120.000	339.670	33.711	.02966	98.522	2254.34	174.23	175.22	1.01901	.346	.584	4199
-100.000	359.670	32.818	.03047	88.268	1934.33	186.02	187.03	1.05279	.348	.597	3921
-80.000	379.670	31.882	.03137	78.776	1636.86	198.08	199.12	1.08549	.350	.613	3641
-60.000	399.670	30.888	.03238	69.902	1359.56	210.48	211.56	1.11742	.353	.632	3356
-40.000	419.670	29.817	.03354	61.512	1100.45	223.33	224.44	1.14887	.357	.658	3064
-20.000	439.670	28.639	.03492	53.456	857.65	236.76	237.92	1.18023	.361	.692	2758
-12.636	447.034	28.169	.03550	50.539	771.97	241.89	243.08	1.19186	.363	.708	2641
-12.636	447.034	1.4036	.7125	.6149	97.65	382.09	405.84	1.55574	.337	.500	819
-.000	459.670	1.3307	.7515	.5684	107.29	387.01	412.05	1.57106	.336	.481	843
20.000	479.670	1.2361	.8090	.5135	120.90	394.55	421.51	1.59121	.340	.467	876
40.000	499.670	1.1586	.8631	.4718	133.21	402.02	430.79	1.61015	.346	.462	906
60.000	519.670	1.0931	.9148	.4385	144.65	409.52	440.01	1.62825	.354	.461	934
80.000	539.670	1.0365	.9648	.4108	155.44	417.10	449.25	1.64570	.363	.464	959
100.000	559.670	.9868	1.0133	.3872	165.74	424.80	458.57	1.66266	.372	.468	983
120.000	579.670	.9427	1.0608	.3668	175.66	432.64	468.00	1.67921	.382	.475	1005
140.000	599.670	.9030	1.1074	.3489	185.26	440.65	477.56	1.69542	.392	.482	1026
160.000	619.670	.8671	1.1532	.3331	194.60	448.84	487.28	1.71135	.403	.490	1047
180.000	639.670	.8344	1.1985	.3188	203.72	457.21	497.16	1.72705	.414	.498	1066
200.000	659.670	.8044	1.2432	.3060	212.65	465.78	507.22	1.74253	.424	.508	1085
220.000	679.670	.7767	1.2874	.2942	221.43	474.55	517.46	1.75783	.435	.517	1103
240.000	699.670	.7511	1.3313	.2835	230.06	483.52	527.90	1.77296	.447	.527	1121
260.000	719.670	.7274	1.3748	.2737	238.57	492.71	538.53	1.78795	.458	.537	1138
280.000	739.670	.7052	1.4181	.2646	246.98	502.10	549.37	1.80280	.469	.547	1155
300.000	759.670	.6845	1.4610	.2561	255.29	511.71	560.41	1.81753	.480	.557	1171
320.000	779.670	.6650	1.5037	.2483	263.52	521.53	571.65	1.83214	.491	.567	1187
340.000	799.670	.6467	1.5462	.2409	271.67	531.56	583.10	1.84664	.502	.578	1203
360.000	819.670	.6295	1.5886	.2341	279.75	541.81	594.76	1.86103	.513	.588	1218
380.000	839.670	.6132	1.6307	.2276	287.78	552.26	606.62	1.87533	.524	.598	1233
400.000	859.670	.5978	1.6727	.2215	295.74	562.93	618.68	1.88953	.534	.608	1248
420.000	879.670	.5833	1.7145	.2158	303.66	573.80	630.95	1.90363	.545	.618	1263
440.000	899.670	.5694	1.7562	.2104	311.53	584.88	643.42	1.91765	.555	.628	1277
460.000	919.670	.5562	1.7978	.2052	319.36	596.16	656.09	1.93158	.566	.638	1292
480.000	939.670	.5437	1.8393	.2003	327.15	607.65	668.95	1.94542	.576	.648	1306
500.000	959.670	.5317	1.8807	.1957	334.90	619.33	682.02	1.95917	.586	.658	1319
520.000	979.670	.5203	1.9220	.1913	342.63	631.21	695.27	1.97285	.596	.668	1333
540.000	999.670	.5094	1.9632	.1871	350.32	643.29	708.72	1.98644	.606	.677	1346
560.000	1019.670	.4989	2.0043	.1831	357.98	655.56	722.36	1.99995	.616	.687	1360
580.000	1039.670	.4889	2.0454	.1793	365.62	668.01	736.19	2.01337	.625	.696	1373
600.000	1059.670	.4793	2.0864	.1756	373.23	680.66	750.20	2.02673	.635	.705	1386
640.000	1099.670	.4612	2.1682	.1687	388.39	706.51	778.78	2.05319	.653	.723	1411
680.000	1139.670	.4445	2.2498	.1624	403.48	733.08	808.07	2.07936	.671	.741	1436
720.000	1179.670	.4290	2.3311	.1565	418.49	760.36	838.06	2.10522	.689	.758	1460
760.000	1219.670	.4145	2.4124	.1511	433.44	788.33	868.74	2.13079	.706	.775	1484
800.000	1259.670	.4011	2.4934	.1460	448.34	816.97	900.08	2.15608	.723	.792	1508

Table 27. Continued.

ETHANE ISOBAR AT P = 200 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.642	163.028	40.713	.02456	249.631	6606.52	76.16	77.07	.61239	.368	.540	6699
-280.000	179.670	40.084	.02495	229.266	6055.06	85.16	86.08	.66505	.363	.543	6475
-260.000	199.670	39.325	.02543	206.464	5426.55	96.03	96.97	.72251	.358	.546	6191
-240.000	219.670	38.561	.02593	185.784	4845.92	106.94	107.90	.77469	.353	.548	5903
-220.000	239.670	37.790	.02646	167.193	4314.45	117.91	118.89	.82253	.349	.550	5614
-200.000	259.670	37.010	.02702	150.515	3829.17	128.93	129.93	.86679	.347	.554	5326
-180.000	279.670	36.217	.02761	135.530	3385.57	140.04	141.06	.90809	.345	.559	5042
-160.000	299.670	35.407	.02824	122.019	2979.01	151.26	152.31	.94693	.345	.566	4760
-140.000	319.670	34.577	.02892	109.776	2605.06	162.63	163.71	.98374	.345	.574	4481
-120.000	339.670	33.720	.02966	98.614	2259.81	174.19	175.28	1.01887	.346	.584	4203
-100.000	359.670	32.829	.03046	88.365	1939.94	185.96	187.09	1.05263	.348	.597	3926
-80.000	379.670	31.894	.03135	78.879	1642.65	198.01	199.17	1.08532	.350	.612	3646
-60.000	399.670	30.903	.03236	70.014	1365.57	210.40	211.60	1.11722	.353	.632	3362
-40.000	419.670	29.835	.03352	61.635	1106.74	223.23	224.47	1.14864	.357	.657	3071
-20.000	439.670	28.662	.03489	53.597	864.31	236.63	237.93	1.17995	.361	.691	2766
-5.973	453.697	27.751	.03604	48.068	703.03	246.50	247.83	1.20213	.365	.723	2541
-5.973	453.697	1.5664	.6384	.6976	94.40	382.91	406.56	1.55180	.343	.519	813
-.000	459.670	1.5243	.6561	.6692	99.39	385.35	409.65	1.56018	.342	.507	826
20.000	479.670	1.4061	.7112	.5964	114.33	393.18	419.52	1.58119	.343	.483	863
40.000	499.670	1.3120	.7622	.5434	127.55	400.84	429.07	1.60070	.349	.473	895
60.000	519.670	1.2338	.8105	.5021	139.67	408.47	438.49	1.61919	.356	.470	924
80.000	539.670	1.1670	.8569	.4683	151.01	416.16	447.89	1.63694	.364	.471	950
100.000	559.670	1.1090	.9017	.4400	161.76	423.95	457.34	1.65413	.373	.474	975
120.000	579.670	1.0577	.9454	.4158	172.05	431.86	466.87	1.67087	.383	.479	998
140.000	599.670	1.0119	.9882	.3946	181.97	439.93	476.53	1.68724	.393	.486	1020
160.000	619.670	.9707	1.0302	.3760	191.59	448.16	486.32	1.70330	.404	.493	1041
180.000	639.670	.9332	1.0715	.3594	200.95	456.58	496.27	1.71910	.414	.502	1061
200.000	659.670	.8990	1.1123	.3444	210.11	465.19	506.38	1.73467	.425	.510	1081
220.000	679.670	.8675	1.1527	.3308	219.08	473.99	516.68	1.75005	.436	.520	1099
240.000	699.670	.8385	1.1926	.3185	227.89	483.00	527.17	1.76525	.447	.529	1117
260.000	719.670	.8115	1.2322	.3072	236.56	492.21	537.84	1.78030	.458	.539	1135
280.000	739.670	.7865	1.2715	.2967	245.12	501.63	548.72	1.79520	.469	.549	1152
300.000	759.670	.7631	1.3105	.2870	253.56	511.26	559.79	1.80998	.480	.559	1169
320.000	779.670	.7411	1.3493	.2781	261.92	521.10	571.07	1.82463	.491	.569	1185
340.000	799.670	.7206	1.3878	.2697	270.18	531.15	582.55	1.83916	.502	.579	1201
360.000	819.670	.7012	1.4262	.2619	278.38	541.41	594.23	1.85359	.513	.589	1216
380.000	839.670	.6829	1.4644	.2545	286.50	551.88	606.12	1.86792	.524	.599	1232
400.000	859.670	.6656	1.5024	.2476	294.56	562.56	618.20	1.88215	.535	.609	1247
420.000	879.670	.6492	1.5403	.2411	302.56	573.45	630.49	1.89628	.545	.619	1262
440.000	899.670	.6337	1.5780	.2350	310.52	584.54	642.98	1.91032	.556	.629	1276
460.000	919.670	.6189	1.6157	.2292	318.42	595.83	655.67	1.92426	.566	.639	1290
480.000	939.670	.6049	1.6532	.2237	326.28	607.33	668.55	1.93812	.576	.649	1304
500.000	959.670	.5915	1.6906	.2185	334.11	619.02	681.63	1.95190	.586	.659	1318
520.000	979.670	.5787	1.7279	.2135	341.89	630.91	694.91	1.96559	.596	.668	1332
540.000	999.670	.5665	1.7652	.2087	349.65	643.00	708.37	1.97919	.606	.678	1346
560.000	1019.670	.5548	1.8023	.2042	357.37	655.28	722.03	1.99272	.616	.687	1359
580.000	1039.670	.5436	1.8394	.1999	365.06	667.74	735.87	2.00616	.625	.697	1372
600.000	1059.670	.5329	1.8765	.1958	372.73	680.40	749.89	2.01952	.635	.706	1385
640.000	1099.670	.5127	1.9503	.1881	387.98	706.26	778.49	2.04601	.653	.724	1411
680.000	1139.670	.4941	2.0240	.1809	403.16	732.85	807.80	2.07219	.671	.742	1436
720.000	1179.670	.4768	2.0974	.1744	418.25	760.14	837.82	2.09807	.689	.759	1460
760.000	1219.670	.4607	2.1707	.1683	433.28	788.12	868.51	2.12366	.706	.776	1484
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ETHANE ISOBAR AT P = 220 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.602	163.068	40.715	.02456	249.637	6609.36	76.17	77.17	.61244	.368	.540	6701
-280.000	179.670	40.087	.02495	229.329	6059.56	85.14	86.16	.66496	.363	.543	6477
-260.000	199.670	39.328	.02543	206.532	5431.28	96.01	97.05	.72242	.358	.546	6194
-240.000	219.670	38.565	.02593	185.857	4850.80	106.92	107.98	.77460	.353	.548	5905
-220.000	239.670	37.795	.02646	167.269	4319.44	117.88	118.96	.82243	.349	.550	5616
-200.000	259.670	37.015	.02702	150.594	3834.25	128.90	130.00	.86668	.347	.554	5329
-180.000	279.670	36.223	.02761	135.612	3390.73	140.01	141.13	.90798	.345	.559	5045
-160.000	299.670	35.414	.02824	122.104	2984.26	151.23	152.38	.94681	.345	.566	4763
-140.000	319.670	34.585	.02891	109.864	2610.41	162.59	163.77	.98361	.345	.574	4485
-120.000	339.670	33.729	.02965	98.706	2265.28	174.14	175.34	1.01872	.346	.584	4207
-100.000	359.670	32.839	.03045	88.462	1945.55	185.90	187.14	1.05247	.348	.596	3930
-80.000	379.670	31.906	.03134	78.982	1648.43	197.94	199.22	1.08514	.350	.612	3651
-60.000	399.670	30.917	.03234	70.126	1371.57	210.32	211.64	1.11702	.353	.631	3368
-40.000	419.670	29.853	.03350	61.759	1113.01	223.13	224.50	1.14841	.357	.656	3077
-20.000	439.670	28.686	.03486	53.737	870.95	236.51	237.93	1.17967	.361	.689	2774
-.000	459.670	27.363	.03655	45.884	643.46	250.69	252.18	1.21135	.367	.739	2450
.221	459.891	27.347	.03657	45.798	641.01	250.85	252.34	1.21171	.367	.739	2446
.221	459.891	1.7326	.5772	.7842	91.08	383.60	407.12	1.54810	.349	.540	808
20.000	479.670	1.5865	.6303	.6878	107.47	391.72	417.40	1.57161	.347	.503	848
40.000	499.670	1.4725	.6791	.6207	121.72	399.60	427.27	1.59177	.351	.486	883
60.000	519.670	1.3796	.7248	.5698	134.59	407.39	436.92	1.61071	.358	.480	914
80.000	539.670	1.3015	.7683	.5290	146.50	415.20	446.50	1.62879	.366	.479	942
100.000	559.670	1.2342	.8102	.4953	157.72	423.07	456.08	1.64623	.375	.480	968
120.000	579.670	1.1752	.8509	.4667	168.40	431.06	465.73	1.66316	.384	.485	992
140.000	599.670	1.1229	.8906	.4419	178.65	439.19	475.47	1.67969	.394	.490	1014
160.000	619.670	1.0759	.9294	.4203	188.56	447.48	485.35	1.69588	.404	.497	1036
180.000	639.670	1.0335	.9676	.4010	198.18	455.95	495.36	1.71179	.415	.505	1057
200.000	659.670	.9948	1.0053	.3838	207.56	464.59	505.54	1.72746	.426	.513	1076
220.000	679.670	.9593	1.0424	.3683	216.73	473.43	515.90	1.74292	.437	.522	1095
240.000	699.670	.9267	1.0791	.3542	225.72	482.47	526.43	1.75820	.447	.531	1114
260.000	719.670	.8965	1.1155	.3413	234.56	491.71	537.15	1.77331	.459	.541	1132
280.000	739.670	.8684	1.1516	.3294	243.26	501.15	548.07	1.78826	.470	.551	1149
300.000	759.670	.8422	1.1874	.3185	251.84	510.80	559.18	1.80308	.481	.560	1166
320.000	779.670	.8177	1.2229	.3083	260.32	520.67	570.48	1.81778	.492	.570	1183
340.000	799.670	.7948	1.2582	.2989	268.70	530.74	581.99	1.83235	.503	.580	1199
360.000	819.670	.7732	1.2933	.2901	277.00	541.02	593.70	1.84682	.513	.591	1214
380.000	839.670	.7529	1.3283	.2818	285.23	551.50	605.61	1.86117	.524	.601	1230
400.000	859.670	.7336	1.3631	.2741	293.38	562.20	617.73	1.87543	.535	.611	1245
420.000	879.670	.7155	1.3977	.2668	301.47	573.10	630.04	1.88958	.545	.621	1260
440.000	899.670	.6982	1.4322	.2599	309.51	584.20	642.55	1.90365	.556	.630	1275
460.000	919.670	.6818	1.4666	.2534	317.49	595.51	655.25	1.91762	.566	.640	1289
480.000	939.670	.6663	1.5009	.2472	325.42	607.01	668.16	1.93150	.576	.650	1303
500.000	959.670	.6514	1.5351	.2414	333.31	618.72	681.25	1.94529	.587	.660	1317
520.000	979.670	.6373	1.5692	.2358	341.16	630.62	694.54	1.95899	.596	.669	1331
540.000	999.670	.6238	1.6032	.2306	348.98	642.71	708.02	1.97261	.606	.679	1345
560.000	1019.670	.6108	1.6371	.2255	356.76	655.00	721.69	1.98615	.616	.688	1358
580.000	1039.670	.5985	1.6709	.2207	364.51	667.48	735.55	1.99961	.626	.697	1372
600.000	1059.670	.5866	1.7047	.2161	372.22	680.14	749.58	2.01298	.635	.707	1385
640.000	1099.670	.5643	1.7721	.2075	387.58	706.02	778.21	2.03949	.653	.725	1410
680.000	1139.670	.5437	1.8392	.1996	402.84	732.61	807.54	2.06569	.672	.742	1436
720.000	1179.670	.5246	1.9062	.1923	418.01	759.92	837.57	2.09159	.689	.759	1460
760.000	1219.670	.5069	1.9730	.1856	433.11	787.91	868.28	2.11719	.706	.776	1484
800.000	1259.670	.4903	2.0396	.1793	448.15	816.57	899.66	2.14251	.723	.793	1508

Table 27. Continued.

ETHANE ISOBAR AT P = 240 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.562	163.108	40.716	.02456	249.643	6612.20	76.17	77.26	.61249	.368	.540	6702
-280.000	179.670	40.090	.02494	229.392	6064.05	85.13	86.24	.66487	.364	.543	6479
-260.000	199.670	39.332	.02542	206.601	5436.00	95.99	97.12	.72233	.358	.545	6196
-240.000	219.670	38.569	.02593	185.929	4855.68	106.90	108.05	.77450	.353	.548	5908
-220.000	239.670	37.800	.02646	167.345	4324.43	117.86	119.03	.82233	.349	.550	5619
-200.000	259.670	37.020	.02701	150.672	3839.33	128.88	130.08	.86658	.347	.554	5332
-180.000	279.670	36.229	.02760	135.693	3395.89	139.98	141.20	.90786	.345	.559	5048
-160.000	299.670	35.421	.02823	122.188	2989.51	151.19	152.45	.94669	.345	.566	4767
-140.000	319.670	34.592	.02891	109.951	2615.76	162.55	163.84	.98348	.345	.574	4488
-120.000	339.670	33.737	.02964	98.797	2270.75	174.09	175.41	1.01858	.346	.584	4211
-100.000	359.670	32.849	.03044	88.559	1951.16	185.85	187.20	1.05232	.348	.596	3934
-80.000	379.670	31.918	.03133	79.085	1654.21	197.88	199.27	1.08497	.350	.611	3656
-60.000	399.670	30.932	.03233	70.237	1377.56	210.24	211.68	1.11682	.353	.630	3373
-40.000	419.670	29.871	.03348	61.881	1119.27	223.04	224.52	1.14818	.357	.655	3084
-20.000	439.670	28.708	.03483	53.876	877.57	236.39	237.94	1.17940	.361	.688	2782
-.000	459.670	27.394	.03650	46.050	650.59	250.53	252.15	1.21100	.367	.736	2460
6.020	465.690	26.957	.03710	43.694	584.78	255.01	256.66	1.22075	.374	.761	2349
6.020	465.690	1.9026	.5256	.8747	87.70	384.18	407.54	1.54460	.354	.562	802
20.000	479.670	1.7791	.5621	.7897	100.25	390.16	415.14	1.56231	.352	.526	833
40.000	499.670	1.6409	.6094	.7045	115.69	398.31	425.39	1.58323	.354	.502	871
60.000	519.670	1.5312	.6531	.6421	129.38	406.27	435.30	1.60268	.360	.491	903
80.000	539.670	1.4402	.6944	.5931	141.92	414.20	445.06	1.62112	.367	.487	933
100.000	559.670	1.3627	.7339	.5532	153.63	422.18	454.80	1.63883	.376	.487	960
120.000	579.670	1.2953	.7720	.5196	164.72	430.25	464.56	1.65597	.385	.490	985
140.000	599.670	1.2359	.8091	.4909	175.32	438.45	474.41	1.67267	.395	.495	1008
160.000	619.670	1.1829	.8454	.4659	185.52	446.79	484.36	1.68900	.405	.501	1031
180.000	639.670	1.1351	.8810	.4439	195.40	455.30	494.46	1.70503	.416	.508	1052
200.000	659.670	1.0917	.9160	.4243	205.00	463.99	504.70	1.72080	.426	.516	1072
220.000	679.670	1.0521	.9505	.4066	214.37	472.87	515.11	1.73634	.437	.525	1092
240.000	699.670	1.0157	.9845	.3906	223.55	481.93	525.69	1.75168	.448	.534	1110
260.000	719.670	.9821	1.0182	.3761	232.55	491.20	536.46	1.76686	.459	.543	1129
280.000	739.670	.9509	1.0516	.3627	241.40	500.67	547.41	1.78187	.470	.553	1146
300.000	759.670	.9219	1.0847	.3504	250.13	510.35	558.56	1.79674	.481	.562	1163
320.000	779.670	.8948	1.1176	.3390	258.73	520.23	569.90	1.81147	.492	.572	1180
340.000	799.670	.8694	1.1502	.3285	267.23	530.32	581.44	1.82609	.503	.582	1197
360.000	819.670	.8456	1.1826	.3186	275.64	540.62	593.18	1.84059	.514	.592	1213
380.000	839.670	.8231	1.2149	.3094	283.96	551.12	605.11	1.85497	.524	.602	1228
400.000	859.670	.8019	1.2470	.3008	292.21	561.83	617.25	1.86926	.535	.612	1244
420.000	879.670	.7819	1.2789	.2927	300.38	572.74	629.58	1.88344	.546	.622	1259
440.000	899.670	.7629	1.3107	.2850	308.50	583.86	642.11	1.89752	.556	.631	1273
460.000	919.670	.7449	1.3424	.2778	316.56	595.18	654.84	1.91152	.566	.641	1288
480.000	939.670	.7278	1.3740	.2710	324.57	606.70	667.76	1.92541	.577	.651	1302
500.000	959.670	.7115	1.4055	.2645	332.53	618.41	680.87	1.93922	.587	.661	1317
520.000	979.670	.6960	1.4368	.2584	340.44	630.32	694.18	1.95295	.597	.670	1330
540.000	999.670	.6811	1.4681	.2525	348.32	642.43	707.67	1.96658	.606	.679	1344
560.000	1019.670	.6670	1.4994	.2470	356.15	654.72	721.36	1.98013	.616	.689	1358
580.000	1039.670	.6534	1.5305	.2417	363.95	667.21	735.22	1.99360	.626	.698	1371
600.000	1059.670	.6404	1.5616	.2366	371.72	679.88	749.28	2.00699	.635	.707	1384
640.000	1099.670	.6159	1.6235	.2271	387.18	705.77	777.92	2.03352	.654	.725	1410
680.000	1139.670	.5934	1.6853	.2184	402.52	732.38	807.28	2.05974	.672	.743	1436
720.000	1179.670	.5725	1.7468	.2104	417.78	759.70	837.33	2.08566	.689	.760	1460
760.000	1219.670	.5530	1.8082	.2029	432.95	787.70	868.06	2.11128	.706	.777	1485
800.000	1259.670	.5349	1.8694	.1960	448.05	816.37	899.45	2.13660	.723	.793	1508

Table 27. Continued.

Table 27. Continued.

ETHANE ISOBAR AT P = 260 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.522	163.148	40.718	.02456	249.650	6615.04	76.18	77.36	.61254	.368	.540	6703
-280.000	179.670	40.094	.02494	229.455	6068.54	85.11	86.31	.66479	.364	.543	6480
-260.000	199.670	39.336	.02542	206.669	5440.73	95.98	97.20	.72224	.358	.545	6198
-240.000	219.670	38.573	.02592	186.001	4860.56	106.88	108.13	.77441	.353	.548	5910
-220.000	239.670	37.804	.02645	167.420	4329.42	117.83	119.11	.82223	.349	.550	5621
-200.000	259.670	37.026	.02701	150.751	3844.40	128.85	130.15	.86647	.347	.554	5335
-180.000	279.670	36.235	.02760	135.774	3401.05	139.95	141.28	.90775	.345	.559	5051
-160.000	299.670	35.427	.02823	122.272	2994.76	151.16	152.52	.94657	.345	.565	4770
-140.000	319.670	34.600	.02890	110.039	2621.10	162.51	163.90	.98335	.345	.573	4492
-120.000	339.670	33.746	.02963	98.889	2276.21	174.04	175.47	1.01844	.346	.584	4215
-100.000	359.670	32.859	.03043	88.655	1956.76	185.79	187.26	1.05216	.348	.596	3939
-80.000	379.670	31.930	.03132	79.188	1659.97	197.81	199.32	1.08480	.350	.611	3661
-60.000	399.670	30.946	.03231	70.348	1383.53	210.17	211.72	1.11663	.354	.630	3379
-40.000	419.670	29.889	.03346	62.004	1125.51	222.94	224.55	1.14795	.357	.654	3090
-20.000	439.670	28.731	.03481	54.015	884.17	236.27	237.95	1.17912	.361	.687	2790
-.000	459.670	27.425	.03646	46.214	657.69	250.37	252.13	1.21065	.367	.734	2469
11.478	471.148	26.575	.03763	41.730	533.49	259.00	260.82	1.22932	.375	.778	2264
11.478	471.148	2.0767	.4815	.9696	84.27	384.64	407.83	1.54125	.360	.585	797
20.000	479.670	1.9865	.5034	.9046	92.60	388.47	412.71	1.55313	.357	.556	817
40.000	499.670	1.8186	.5499	.7959	109.45	396.94	423.41	1.57498	.357	.519	858
60.000	519.670	1.6890	.5921	.7194	124.05	405.10	433.61	1.59500	.362	.503	893
80.000	539.670	1.5835	.6315	.6608	137.26	413.18	443.59	1.61384	.369	.496	924
100.000	559.670	1.4946	.6691	.6138	149.50	421.27	453.48	1.63184	.377	.494	952
120.000	579.670	1.4181	.7052	.5748	161.01	429.42	463.37	1.64921	.386	.496	978
140.000	599.670	1.3511	.7402	.5417	171.96	437.69	473.32	1.66609	.396	.500	1002
160.000	619.670	1.2916	.7743	.5131	182.47	446.09	483.37	1.68256	.406	.505	1025
180.000	639.670	1.2382	.8076	.4880	192.61	454.65	493.54	1.69871	.416	.512	1047
200.000	659.670	1.1899	.8404	.4658	202.44	463.38	503.84	1.71458	.427	.519	1068
220.000	679.670	1.1459	.8727	.4459	212.02	472.30	514.31	1.73021	.438	.527	1088
240.000	699.670	1.1056	.9045	.4279	221.38	481.40	524.94	1.74563	.448	.536	1107
260.000	719.670	1.0685	.9359	.4116	230.55	490.70	535.76	1.76086	.459	.545	1125
280.000	739.670	1.0341	.9670	.3966	239.55	500.19	546.75	1.77593	.470	.554	1143
300.000	759.670	1.0021	.9979	.3829	248.41	509.89	557.93	1.79085	.481	.564	1161
320.000	779.670	.9723	1.0284	.3703	257.14	519.80	569.31	1.80563	.492	.574	1178
340.000	799.670	.9445	1.0588	.3585	265.76	529.90	580.88	1.82028	.503	.583	1194
360.000	819.670	.9183	1.0890	.3476	274.27	540.22	592.65	1.83482	.514	.593	1211
380.000	839.670	.8937	1.1189	.3374	282.70	550.74	604.61	1.84923	.525	.603	1226
400.000	859.670	.8705	1.1487	.3279	291.04	561.46	616.77	1.86355	.535	.613	1242
420.000	879.670	.8486	1.1784	.3189	299.30	572.39	629.13	1.87775	.546	.623	1257
440.000	899.670	.8279	1.2079	.3105	307.50	583.52	641.68	1.89186	.556	.632	1272
460.000	919.670	.8082	1.2373	.3025	315.64	594.85	654.42	1.90588	.567	.642	1287
480.000	939.670	.7895	1.2666	.2950	323.72	606.38	667.36	1.91979	.577	.652	1301
500.000	959.670	.7717	1.2958	.2879	331.74	618.11	680.49	1.93362	.587	.661	1316
520.000	979.670	.7548	1.3249	.2811	339.72	630.03	693.82	1.94736	.597	.671	1330
540.000	999.670	.7386	1.3539	.2747	347.66	642.14	707.33	1.96101	.607	.680	1343
560.000	1019.670	.7232	1.3828	.2686	355.55	654.45	721.02	1.97458	.616	.689	1357
580.000	1039.670	.7084	1.4117	.2628	363.41	666.94	734.90	1.98806	.626	.699	1371
600.000	1059.670	.6942	1.4405	.2572	371.23	679.62	748.97	2.00146	.635	.708	1384
640.000	1099.670	.6676	1.4979	.2468	386.78	705.52	777.64	2.02802	.654	.726	1410
680.000	1139.670	.6431	1.5550	.2373	402.21	732.15	807.02	2.05425	.672	.743	1435
720.000	1179.670	.6204	1.6120	.2285	417.55	759.48	837.09	2.08019	.689	.760	1460
760.000	1219.670	.5992	1.6688	.2204	432.79	787.49	867.83	2.10582	.706	.777	1485
800.000	1259.670	.5796	1.7254	.2128	447.96	816.17	899.24	2.13116	.723	.793	1508

Table 27. Continued.

ETHANE ISOBAR AT P = 280 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.482	163.188	40.719	.02456	249.656	6617.88	76.19	77.46	.61258	.368	.540	6704
-280.000	179.670	40.097	.02494	229.517	6073.02	85.10	86.39	.66470	.364	.543	6482
-260.000	199.670	39.339	.02542	206.737	5445.45	95.96	97.28	.72215	.358	.545	6200
-240.000	219.670	38.578	.02592	186.074	4865.43	106.86	108.20	.77431	.353	.548	5912
-220.000	239.670	37.809	.02645	167.496	4334.40	117.81	119.18	.82213	.349	.550	5624
-200.000	259.670	37.031	.02700	150.829	3849.48	128.82	130.22	.86637	.347	.554	5338
-180.000	279.670	36.240	.02759	135.856	3406.21	139.92	141.35	.90764	.345	.559	5054
-160.000	299.670	35.434	.02822	122.356	3000.00	151.12	152.58	.94645	.345	.565	4774
-140.000	319.670	34.607	.02890	110.126	2626.45	162.47	163.97	.98322	.345	.573	4496
-120.000	339.670	33.755	.02963	98.980	2281.67	173.99	175.53	1.01830	.346	.583	4219
-100.000	359.670	32.870	.03042	88.751	1962.35	185.74	187.31	1.05201	.348	.596	3943
-80.000	379.670	31.942	.03131	79.290	1665.74	197.75	199.37	1.08462	.351	.611	3666
-60.000	399.670	30.961	.03230	70.459	1389.50	210.09	211.76	1.11643	.354	.629	3385
-40.000	419.670	29.907	.03344	62.126	1131.75	222.85	224.58	1.14772	.357	.654	3097
-20.000	439.670	28.754	.03478	54.153	890.75	236.15	237.96	1.17885	.362	.686	2797
-.000	459.670	27.455	.03642	46.377	664.76	250.21	252.10	1.21031	.367	.732	2479
16.639	476.309	26.201	.03817	39.885	486.46	262.84	264.82	1.23747	.377	.797	2183
16.639	476.309	2.2554	.4434	1.0692	80.79	385.01	408.00	1.53801	.365	.611	791
20.000	479.670	2.2125	.4520	1.0368	84.40	386.62	410.06	1.54391	.363	.594	799
40.000	499.670	2.0070	.4983	.8961	102.95	395.48	421.32	1.56692	.361	.540	844
60.000	519.670	1.8539	.5394	.8024	118.58	403.89	431.85	1.58760	.365	.517	882
80.000	539.670	1.7318	.5774	.7326	132.52	412.12	442.06	1.60688	.371	.506	915
100.000	559.670	1.6303	.6134	.6775	145.31	420.33	452.13	1.62519	.379	.502	944
120.000	579.670	1.5438	.6478	.6323	157.27	428.58	462.16	1.64280	.387	.502	971
140.000	599.670	1.4685	.6810	.5944	168.59	436.92	472.22	1.65987	.397	.505	996
160.000	619.670	1.4021	.7132	.5618	179.41	445.38	482.36	1.67650	.407	.509	1020
180.000	639.670	1.3428	.7447	.5334	189.81	453.99	492.61	1.69277	.417	.515	1042
200.000	659.670	1.2893	.7756	.5083	199.89	462.77	502.98	1.70874	.427	.522	1063
220.000	679.670	1.2408	.8059	.4860	209.67	471.72	513.51	1.72446	.438	.530	1084
240.000	699.670	1.1964	.8358	.4659	219.22	480.86	524.19	1.73995	.449	.539	1103
260.000	719.670	1.1556	.8654	.4477	228.55	490.18	535.05	1.75525	.460	.547	1122
280.000	739.670	1.1179	.8945	.4311	237.71	499.71	546.09	1.77038	.471	.556	1140
300.000	759.670	1.0829	.9234	.4159	246.71	509.43	557.31	1.78535	.482	.566	1158
320.000	779.670	1.0504	.9521	.4019	255.56	519.36	568.72	1.80017	.493	.575	1175
340.000	799.670	1.0199	.9805	.3890	264.30	529.49	580.32	1.81487	.503	.585	1192
360.000	819.670	.9914	1.0087	.3769	272.92	539.82	592.12	1.82943	.514	.595	1209
380.000	839.670	.9646	1.0367	.3657	281.44	550.36	604.11	1.84389	.525	.604	1225
400.000	859.670	.9394	1.0645	.3552	289.88	561.10	616.29	1.85823	.536	.614	1240
420.000	879.670	.9156	1.0922	.3454	298.23	572.04	628.67	1.87246	.546	.624	1256
440.000	899.670	.8930	1.1198	.3361	306.51	583.18	641.24	1.88659	.556	.634	1271
460.000	919.670	.8717	1.1472	.3274	314.72	594.53	654.01	1.90063	.567	.643	1286
480.000	939.670	.8514	1.1746	.3192	322.87	606.07	666.97	1.91457	.577	.653	1300
500.000	959.670	.8321	1.2018	.3114	330.97	617.80	680.12	1.92841	.587	.662	1315
520.000	979.670	.8137	1.2289	.3040	339.01	629.73	693.45	1.94217	.597	.672	1329
540.000	999.670	.7962	1.2560	.2970	347.01	641.86	706.98	1.95583	.607	.681	1343
560.000	1019.670	.7795	1.2829	.2904	354.96	654.17	720.69	1.96942	.616	.690	1357
580.000	1039.670	.7635	1.3098	.2840	362.87	666.67	734.56	1.98291	.626	.699	1370
600.000	1059.670	.7481	1.3367	.2780	370.74	679.36	748.66	1.99632	.635	.708	1383
640.000	1099.670	.7194	1.3901	.2666	386.38	705.28	777.35	2.02290	.654	.726	1410
680.000	1139.670	.6928	1.4434	.2563	401.90	731.92	806.75	2.04916	.672	.744	1435
720.000	1179.670	.6683	1.4964	.2467	417.32	759.26	836.84	2.07511	.689	.761	1460
760.000	1219.670	.6455	1.5493	.2379	432.64	787.28	867.61	2.10075	.707	.777	1485
800.000	1259.670	.6242	1.6020	.2297	447.87	815.97	899.04	2.12610	.723	.794	1509

ETHANE ISOBAR AT P = 300 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.442	163.228	40.721	.02456	249.663	6620.72	76.20	77.56	.61263	.368	.540	6705
-280.000	179.670	40.100	.02494	229.580	6077.51	85.08	86.47	.66461	.364	.543	6484
-260.000	199.670	39.343	.02542	206.805	5450.17	95.94	97.35	.72206	.358	.545	6202
-240.000	219.670	38.582	.02592	186.146	4870.31	106.84	108.28	.77421	.353	.547	5915
-220.000	239.670	37.813	.02645	167.571	4339.39	117.79	119.26	.82203	.349	.550	5627
-200.000	259.670	37.036	.02700	150.908	3854.55	128.79	130.29	.86626	.347	.554	5340
-180.000	279.670	36.246	.02759	135.937	3411.37	139.88	141.42	.90753	.345	.559	5057
-160.000	299.670	35.441	.02822	122.441	3005.24	151.09	152.65	.94633	.345	.565	4777
-140.000	319.670	34.615	.02889	110.214	2631.78	162.43	164.03	.98309	.345	.573	4499
-120.000	339.670	33.764	.02962	99.071	2287.12	173.95	175.59	1.01816	.346	.583	4223
-100.000	359.670	32.880	.03041	88.847	1967.94	185.68	187.37	1.05185	.348	.595	3948
-80.000	379.670	31.954	.03129	79.392	1671.49	197.68	199.42	1.08445	.351	.610	3671
-60.000	399.670	30.975	.03228	70.569	1395.46	210.01	211.80	1.11623	.354	.629	3390
-40.000	419.670	29.925	.03342	62.247	1137.97	222.75	224.61	1.14749	.357	.653	3103
-20.000	439.670	28.776	.03475	54.290	897.31	236.04	237.97	1.17858	.362	.685	2805
-.000	459.670	27.485	.03638	46.539	671.79	250.06	252.08	1.20997	.367	.730	2488
20.000	479.670	25.964	.03851	38.754	459.09	265.30	267.44	1.24267	.378	.809	2133
21.539	481.209	25.833	.03871	38.142	443.15	266.54	268.69	1.24527	.379	.817	2104
21.539	481.209	2.4390	.4100	1.1737	77.28	385.29	408.07	1.53485	.371	.638	784
40.000	499.670	2.2079	.4529	1.0071	96.15	393.93	419.09	1.55895	.365	.565	830
60.000	519.670	2.0267	.4934	.8919	112.95	402.61	430.02	1.58040	.367	.532	870
80.000	539.670	1.8855	.5304	.8087	127.68	411.03	440.49	1.60017	.373	.517	905
100.000	559.670	1.7700	.5650	.7444	141.06	419.36	450.75	1.61883	.380	.510	936
120.000	579.670	1.6725	.5979	.6923	153.49	427.71	460.93	1.63670	.389	.508	964
140.000	599.670	1.5884	.6296	.6490	165.19	436.13	471.11	1.65396	.398	.510	990
160.000	619.670	1.5145	.6603	.6121	176.33	444.66	481.34	1.67075	.408	.514	1014
180.000	639.670	1.4489	.6902	.5801	187.01	453.33	491.67	1.68715	.418	.519	1037
200.000	659.670	1.3900	.7194	.5520	197.32	462.15	502.11	1.70323	.428	.526	1059
220.000	679.670	1.3367	.7481	.5271	207.32	471.14	512.70	1.71904	.439	.533	1080
240.000	699.670	1.2881	.7764	.5048	217.06	480.31	523.44	1.73461	.449	.541	1100
260.000	719.670	1.2435	.8042	.4846	226.56	489.67	534.35	1.74998	.460	.550	1119
280.000	739.670	1.2024	.8317	.4663	235.87	499.22	545.42	1.76516	.471	.558	1138
300.000	759.670	1.1643	.8589	.4495	245.01	508.97	556.68	1.78018	.482	.568	1156
320.000	779.670	1.1289	.8859	.4341	253.99	518.92	568.13	1.79505	.493	.577	1173
340.000	799.670	1.0958	.9126	.4199	262.84	529.07	579.76	1.80979	.504	.586	1190
360.000	819.670	1.0649	.9391	.4067	271.57	539.42	591.59	1.82439	.515	.596	1207
380.000	839.670	1.0358	.9654	.3944	280.20	549.97	603.60	1.83887	.525	.606	1223
400.000	859.670	1.0085	.9916	.3829	288.72	560.73	615.81	1.85324	.536	.615	1239
420.000	879.670	.9827	1.0176	.3722	297.16	571.69	628.21	1.86750	.546	.625	1254
440.000	899.670	.9584	1.0434	.3621	305.53	582.84	640.81	1.88166	.557	.635	1270
460.000	919.670	.9353	1.0692	.3526	313.81	594.20	653.59	1.89572	.567	.644	1285
480.000	939.670	.9134	1.0948	.3436	322.04	605.75	666.57	1.90968	.577	.654	1299
500.000	959.670	.8926	1.1203	.3352	330.20	617.50	679.74	1.92354	.587	.663	1314
520.000	979.670	.8728	1.1458	.3272	338.30	629.44	693.09	1.93731	.597	.672	1328
540.000	999.670	.8539	1.1711	.3195	346.36	641.57	706.63	1.95100	.607	.682	1342
560.000	1019.670	.8358	1.1964	.3123	354.37	653.89	720.36	1.96459	.617	.691	1356
580.000	1039.670	.8186	1.2216	.3054	362.33	666.40	734.27	1.97810	.626	.700	1370
600.000	1059.670	.8021	1.2467	.2989	370.26	679.10	748.36	1.99152	.635	.709	1383
640.000	1099.670	.7711	1.2968	.2866	386.00	705.03	777.07	2.01812	.654	.727	1409
680.000	1139.670	.7426	1.3466	.2754	401.60	731.69	806.49	2.04440	.672	.744	1435
720.000	1179.670	.7162	1.3962	.2650	417.09	759.04	836.60	2.07036	.690	.761	1460
760.000	1219.670	.6917	1.4457	.2555	432.49	787.07	867.39	2.09603	.707	.778	1485
800.000	1259.670	.6689	1.4950	.2467	447.79	815.78	898.83	2.12139	.723	.794	1509

Table 27. Continued.

ETHANE ISOBAR AT P = 320 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.402	163.268	40.722	.02456	249.669	6623.56	76.20	77.66	.61268	.368	.540	6706
-280.000	179.670	40.103	.02494	229.643	6081.99	85.07	86.54	.66453	.364	.543	6486
-260.000	199.670	39.347	.02542	206.873	5454.89	95.92	97.43	.72197	.358	.545	6204
-240.000	219.670	38.586	.02592	186.218	4875.18	106.82	108.35	.77412	.353	.547	5917
-220.000	239.670	37.818	.02644	167.647	4344.37	117.76	119.33	.82193	.349	.550	5629
-200.000	259.670	37.041	.02700	150.986	3859.62	128.77	130.37	.86615	.347	.554	5343
-180.000	279.670	36.252	.02758	136.018	3416.52	139.85	141.49	.90741	.345	.559	5060
-160.000	299.670	35.447	.02821	122.525	3010.48	151.05	152.72	.94621	.345	.565	4780
-140.000	319.670	34.623	.02888	110.301	2637.12	162.39	164.10	.98296	.345	.573	4503
-120.000	339.670	33.772	.02961	99.162	2292.57	173.90	175.65	1.01802	.346	.583	4227
-100.000	359.670	32.890	.03040	88.943	1973.52	185.63	187.43	1.05170	.348	.595	3952
-80.000	379.670	31.966	.03128	79.494	1677.24	197.62	199.47	1.08428	.351	.610	3676
-60.000	399.670	30.989	.03227	70.679	1401.41	209.93	211.85	1.11604	.354	.628	3396
-40.000	419.670	29.942	.03340	62.368	1144.17	222.66	224.64	1.14727	.357	.652	3110
-20.000	439.670	28.798	.03472	54.427	903.85	235.92	237.98	1.17831	.362	.683	2813
-.000	459.670	27.515	.03634	46.699	678.80	249.91	252.06	1.20963	.367	.728	2498
20.000	479.670	26.007	.03845	38.956	466.83	265.09	267.36	1.24221	.378	.805	2145
26.206	485.876	25.468	.03926	36.488	403.13	270.13	272.46	1.25276	.380	.838	2029
26.206	485.876	2.6279	.3805	1.2836	73.73	385.49	408.04	1.53175	.376	.667	778
40.000	499.670	2.4240	.4125	1.1311	89.01	392.27	416.71	1.55097	.370	.596	815
60.000	519.670	2.2084	.4528	.9887	107.15	401.27	428.11	1.57334	.370	.550	859
80.000	539.670	2.0452	.4889	.8897	122.75	409.90	438.87	1.59366	.375	.529	895
100.000	559.670	1.9140	.5225	.8147	136.76	418.37	449.33	1.61270	.382	.519	928
120.000	579.670	1.8044	.5542	.7549	149.68	426.83	459.67	1.63085	.390	.515	957
140.000	599.670	1.7107	.5846	.7056	161.77	435.33	469.97	1.64832	.399	.516	984
160.000	619.670	1.6290	.6139	.6640	173.24	443.93	480.31	1.66527	.408	.518	1009
180.000	639.670	1.5567	.6424	.6282	184.21	452.65	490.72	1.68181	.418	.523	1032
200.000	659.670	1.4920	.6702	.5969	194.76	461.52	501.24	1.69800	.429	.529	1055
220.000	679.670	1.4337	.6975	.5692	204.98	470.56	511.89	1.71390	.439	.536	1076
240.000	699.670	1.3807	.7243	.5445	214.90	479.76	522.68	1.72956	.450	.544	1096
260.000	719.670	1.3321	.7507	.5222	224.58	489.15	533.63	1.74499	.461	.552	1116
280.000	739.670	1.2875	.7767	.5021	234.04	498.73	544.76	1.76024	.472	.561	1135
300.000	759.670	1.2462	.8025	.4837	243.32	508.51	556.06	1.77531	.482	.569	1153
320.000	779.670	1.2078	.8279	.4668	252.43	518.48	567.54	1.79023	.493	.579	1171
340.000	799.670	1.1721	.8532	.4512	261.40	528.65	579.20	1.80500	.504	.588	1188
360.000	819.670	1.1387	.8782	.4368	270.24	539.02	591.06	1.81964	.515	.597	1205
380.000	839.670	1.1074	.9030	.4234	278.96	549.59	603.10	1.83416	.525	.607	1221
400.000	859.670	1.0779	.9277	.4109	287.58	560.36	615.33	1.84856	.536	.616	1237
420.000	879.670	1.0502	.9522	.3993	296.11	571.33	627.76	1.86284	.547	.626	1253
440.000	899.670	1.0239	.9766	.3883	304.55	582.50	640.37	1.87702	.557	.636	1268
460.000	919.670	.9991	1.0009	.3780	312.91	593.87	653.18	1.89110	.567	.645	1284
480.000	939.670	.9756	1.0250	.3683	321.21	605.43	666.17	1.90508	.577	.655	1298
500.000	959.670	.9532	1.0491	.3591	329.44	617.19	679.36	1.91896	.587	.664	1313
520.000	979.670	.9320	1.0730	.3505	337.61	629.15	692.73	1.93275	.597	.673	1327
540.000	999.670	.9117	1.0969	.3422	345.72	641.29	706.28	1.94645	.607	.682	1341
560.000	1019.670	.8923	1.1207	.3344	353.79	653.62	720.02	1.96006	.617	.692	1355
580.000	1039.670	.8738	1.1444	.3270	361.81	666.14	733.95	1.97358	.626	.701	1369
600.000	1059.670	.8562	1.1680	.3199	369.78	678.84	748.05	1.98702	.636	.710	1383
640.000	1099.670	.8230	1.2151	.3067	385.61	704.79	776.79	2.01364	.654	.727	1409
680.000	1139.670	.7924	1.2619	.2946	401.31	731.45	806.23	2.03994	.672	.745	1435
720.000	1179.670	.7642	1.3086	.2835	416.88	758.82	836.36	2.06592	.690	.762	1460
760.000	1219.670	.7379	1.3551	.2732	432.34	786.86	867.16	2.09159	.707	.778	1485
800.000	1259.670	.7135	1.4014	.2637	447.71	815.58	898.62	2.11697	.723	.795	1509

ETHANE ISOBAR AT P = 350 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.342	163.328	40.724	.02456	249.679	6627.82	76.22	77.81	.61275	.368	.540	6708
-280.000	179.670	40.108	.02493	229.737	6088.71	85.04	86.66	.66440	.364	.543	6489
-260.000	199.670	39.352	.02541	206.976	5461.96	95.89	97.54	.72183	.358	.545	6208
-240.000	219.670	38.592	.02591	186.326	4882.48	106.79	108.47	.77398	.353	.547	5921
-220.000	239.670	37.825	.02644	167.760	4351.83	117.73	119.44	.82178	.349	.550	5633
-200.000	259.670	37.049	.02699	151.103	3867.22	128.73	130.48	.86600	.347	.554	5348
-180.000	279.670	36.261	.02758	136.139	3424.24	139.81	141.59	.90725	.345	.559	5065
-160.000	299.670	35.457	.02820	122.650	3018.33	151.00	152.82	.94603	.345	.565	4785
-140.000	319.670	34.634	.02887	110.432	2645.12	162.33	164.20	.98277	.345	.573	4509
-120.000	339.670	33.785	.02960	99.299	2300.73	173.83	175.75	1.01781	.346	.583	4233
-100.000	359.670	32.905	.03039	89.087	1981.89	185.54	187.51	1.05147	.348	.595	3959
-80.000	379.670	31.984	.03127	79.647	1685.84	197.52	199.55	1.08402	.351	.609	3683
-60.000	399.670	31.011	.03225	70.844	1410.32	209.82	211.91	1.11575	.354	.628	3404
-40.000	419.670	29.968	.03337	62.549	1153.45	222.52	224.68	1.14693	.357	.651	3119
-20.000	439.670	28.831	.03468	54.630	913.62	235.74	237.99	1.17791	.362	.682	2824
-.000	459.670	27.558	.03629	46.937	689.25	249.68	252.03	1.20913	.367	.725	2512
20.000	479.670	26.071	.03836	39.254	478.33	264.77	267.25	1.24153	.378	.799	2164
32.824	492.494	24.926	.04012	34.149	348.48	275.34	277.94	1.26351	.383	.874	1919
32.824	492.494	2.9227	.3421	1.4594	68.36	385.63	407.80	1.52717	.384	.717	768
40.000	499.670	2.7846	.3591	1.3500	77.42	389.47	412.75	1.53876	.378	.659	790
60.000	519.670	2.5008	.3999	1.1505	98.08	399.13	425.04	1.56289	.375	.582	840
80.000	539.670	2.2975	.4353	1.0216	115.15	408.11	436.32	1.58419	.378	.550	880
100.000	559.670	2.1388	.4676	.9274	130.19	416.83	447.14	1.60387	.384	.534	915
120.000	579.670	2.0089	.4978	.8542	143.89	425.46	457.73	1.62247	.392	.527	946
140.000	599.670	1.8992	.5265	.7948	156.61	434.11	468.23	1.64028	.400	.525	975
160.000	619.670	1.8045	.5542	.7452	168.59	442.81	478.73	1.65750	.410	.526	1001
180.000	639.670	1.7214	.5809	.7029	179.99	451.63	489.27	1.67425	.419	.529	1025
200.000	659.670	1.6476	.6069	.6663	190.92	460.57	499.91	1.69062	.430	.534	1048
220.000	679.670	1.5813	.6324	.6342	201.46	469.67	510.65	1.70666	.440	.541	1070
240.000	699.670	1.5213	.6573	.6056	211.68	478.93	521.53	1.72244	.451	.548	1091
260.000	719.670	1.4666	.6818	.5800	221.61	488.37	532.56	1.73798	.461	.555	1111
280.000	739.670	1.4164	.7060	.5569	231.31	497.99	543.75	1.75332	.472	.564	1131
300.000	759.670	1.3701	.7299	.5359	240.79	507.81	555.11	1.76847	.483	.572	1149
320.000	779.670	1.3272	.7534	.5167	250.10	517.81	566.64	1.78346	.494	.581	1167
340.000	799.670	1.2874	.7768	.4991	259.24	528.01	578.36	1.79829	.504	.590	1185
360.000	819.670	1.2501	.7999	.4828	268.25	538.41	590.26	1.81299	.515	.600	1202
380.000	839.670	1.2153	.8229	.4676	277.12	549.01	602.34	1.82755	.526	.609	1219
400.000	859.670	1.1826	.8456	.4536	285.88	559.81	614.61	1.84200	.536	.618	1235
420.000	879.670	1.1518	.8682	.4404	294.54	570.80	627.07	1.85632	.547	.628	1251
440.000	899.670	1.1227	.8907	.4281	303.10	581.99	639.72	1.87054	.557	.637	1267
460.000	919.670	1.0952	.9131	.4166	311.58	593.38	652.56	1.88465	.567	.647	1282
480.000	939.670	1.0692	.9353	.4057	319.98	604.96	665.58	1.89866	.578	.656	1297
500.000	959.670	1.0444	.9574	.3955	328.31	616.74	678.79	1.91257	.588	.665	1312
520.000	979.670	1.0209	.9795	.3858	336.57	628.70	692.18	1.92639	.597	.674	1326
540.000	999.670	.9986	1.0014	.3766	344.78	640.86	705.76	1.94011	.607	.684	1340
560.000	1019.670	.9772	1.0233	.3679	352.93	653.20	719.53	1.95374	.617	.693	1355
580.000	1039.670	.9569	1.0451	.3596	361.02	665.74	733.47	1.96728	.626	.702	1368
600.000	1059.670	.9374	1.0668	.3517	369.08	678.45	747.59	1.98073	.636	.711	1382
640.000	1099.670	.9008	1.1101	.3370	385.05	704.42	776.37	2.00739	.654	.728	1409
680.000	1139.670	.8672	1.1531	.3236	400.87	731.11	805.84	2.03372	.672	.745	1435
720.000	1179.670	.8362	1.1959	.3113	416.56	758.49	836.00	2.05972	.690	.762	1460
760.000	1219.670	.8074	1.2386	.2999	432.13	786.55	866.83	2.08542	.707	.779	1485
800.000	1259.670	.7806	1.2811	.2894	447.59	815.28	898.31	2.11082	.724	.795	1509

Table 27. Continued.

ETHANE ISOBAR AT P = 400 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.242	163.428	40.728	.02455	249.695	6634.91	76.24	78.06	.61287	.368	.540	6711
-280.000	179.670	40.117	.02493	229.893	6099.90	85.00	86.85	.66418	.364	.543	6494
-260.000	199.670	39.361	.02541	207.146	5473.74	95.85	97.73	.72160	.358	.545	6213
-240.000	219.670	38.602	.02591	186.506	4894.65	106.74	108.66	.77374	.353	.547	5927
-220.000	239.670	37.836	.02643	167.948	4364.27	117.67	119.63	.82153	.349	.550	5640
-200.000	259.670	37.062	.02698	151.299	3879.88	128.66	130.66	.86573	.347	.553	5355
-180.000	279.670	36.276	.02757	136.342	3437.11	139.73	141.77	.90697	.345	.558	5073
-160.000	299.670	35.474	.02819	122.860	3031.41	150.91	153.00	.94573	.345	.565	4794
-140.000	319.670	34.653	.02886	110.649	2658.42	162.22	164.36	.98244	.345	.572	4518
-120.000	339.670	33.807	.02958	99.525	2314.31	173.71	175.90	1.01746	.346	.582	4243
-100.000	359.670	32.930	.03037	89.325	1995.80	185.41	187.66	1.05108	.348	.594	3970
-80.000	379.670	32.014	.03124	79.900	1700.15	197.36	199.68	1.08359	.351	.608	3696
-60.000	399.670	31.046	.03221	71.116	1425.12	209.63	212.01	1.11527	.354	.626	3418
-40.000	419.670	30.011	.03332	62.847	1168.86	222.29	224.76	1.14638	.357	.649	3135
-20.000	439.670	28.885	.03462	54.966	929.82	235.46	238.02	1.17725	.362	.679	2843
-.000	459.670	27.630	.03619	47.329	706.53	249.31	251.99	1.20831	.367	.720	2535
20.000	479.670	26.173	.03821	39.739	497.24	264.25	267.08	1.24043	.378	.790	2193
40.000	499.670	24.348	.04107	31.817	298.67	280.92	283.96	1.27489	.386	.915	1810
42.982	502.652	24.020	.04163	30.556	269.53	283.65	286.74	1.28043	.388	.947	1745
42.982	502.652	3.4495	.2899	1.7863	59.25	385.45	406.92	1.51955	.398	.819	751
60.000	519.670	3.0578	.3270	1.4790	81.66	395.05	419.27	1.54534	.385	.661	805
80.000	539.670	2.7585	.3625	1.2747	101.86	404.87	431.72	1.56885	.384	.594	853
100.000	559.670	2.5404	.3936	1.1374	118.91	414.09	443.25	1.58984	.389	.563	893
120.000	579.670	2.3687	.4222	1.0354	134.05	423.08	454.35	1.60932	.395	.548	928
140.000	599.670	2.2276	.4489	.9552	147.90	431.98	465.23	1.62777	.403	.541	959
160.000	619.670	2.1081	.4744	.8899	160.79	440.89	476.02	1.64548	.412	.539	987
180.000	639.670	2.0048	.4988	.8351	172.95	449.87	486.81	1.66262	.421	.540	1013
200.000	659.670	1.9140	.5225	.7883	184.52	458.95	497.65	1.67929	.431	.544	1038
220.000	679.670	1.8332	.5455	.7477	195.62	468.16	508.57	1.69560	.441	.549	1061
240.000	699.670	1.7606	.5680	.7120	206.33	477.52	519.60	1.71159	.452	.555	1083
260.000	719.670	1.6948	.5900	.6802	216.70	487.05	530.75	1.72732	.462	.562	1104
280.000	739.670	1.6347	.6117	.6517	226.79	496.75	542.06	1.74281	.473	.569	1124
300.000	759.670	1.5796	.6331	.6260	236.63	506.63	553.52	1.75810	.484	.577	1143
320.000	779.670	1.5287	.6541	.6025	246.26	516.70	565.15	1.77321	.495	.586	1162
340.000	799.670	1.4816	.6750	.5811	255.70	526.95	576.95	1.78815	.505	.594	1180
360.000	819.670	1.4377	.6956	.5614	264.97	537.40	588.92	1.80294	.516	.603	1198
380.000	839.670	1.3967	.7160	.5432	274.10	548.04	601.07	1.81759	.526	.612	1215
400.000	859.670	1.3583	.7362	.5263	283.09	558.88	613.41	1.83211	.537	.621	1231
420.000	879.670	1.3223	.7563	.5105	291.96	569.91	625.93	1.84650	.547	.631	1248
440.000	899.670	1.2883	.7762	.4959	300.73	581.14	638.63	1.86078	.558	.640	1264
460.000	919.670	1.2562	.7960	.4821	309.39	592.56	651.52	1.87495	.568	.649	1279
480.000	939.670	1.2259	.8157	.4692	317.97	604.17	664.59	1.88901	.578	.658	1295
500.000	959.670	1.1972	.8353	.4570	326.47	615.97	677.84	1.90296	.588	.667	1310
520.000	979.670	1.1699	.8548	.4456	334.89	627.97	691.28	1.91682	.598	.676	1324
540.000	999.670	1.1439	.8742	.4347	343.24	640.15	704.90	1.93058	.608	.685	1339
560.000	1019.670	1.1192	.8935	.4244	351.53	652.51	718.70	1.94425	.617	.694	1353
580.000	1039.670	1.0956	.9127	.4147	359.76	665.07	732.67	1.95782	.627	.703	1367
600.000	1059.670	1.0731	.9319	.4054	367.94	677.80	746.83	1.97131	.636	.712	1381
640.000	1099.670	1.0308	.9701	.3882	384.14	703.81	775.67	1.99802	.654	.730	1408
680.000	1139.670	.9921	1.0080	.3724	400.17	730.53	805.19	2.02440	.672	.747	1434
720.000	1179.670	.9563	1.0457	.3580	416.05	757.95	835.40	2.05045	.690	.764	1460
760.000	1219.670	.9231	1.0833	.3448	431.80	786.04	866.28	2.07618	.707	.780	1485
800.000	1259.670	.8923	1.1207	.3326	447.43	814.79	897.80	2.10161	.724	.796	1510

Table 27. Continued.

Table 27. Continued.

ETHANE ISOBAR AT P = 450 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.142	163.528	40.732	.02455	249.712	6642.01	76.26	78.30	.61299	.368	.540	6714
-280.000	179.670	40.125	.02492	230.050	6111.08	84.97	87.04	.66396	.364	.543	6499
-260.000	199.670	39.371	.02540	207.316	5485.51	95.81	97.92	.72138	.358	.545	6218
-240.000	219.670	38.612	.02590	186.686	4906.80	106.69	108.84	.77350	.353	.547	5933
-220.000	239.670	37.848	.02642	168.136	4376.70	117.61	119.81	.82128	.350	.550	5646
-200.000	259.670	37.075	.02697	151.494	3892.52	128.59	130.84	.86547	.347	.553	5362
-180.000	279.670	36.290	.02756	136.543	3449.95	139.65	141.95	.90669	.346	.558	5080
-160.000	299.670	35.490	.02818	123.068	3044.46	150.82	153.17	.94543	.345	.564	4802
-140.000	319.670	34.672	.02884	110.865	2671.71	162.12	164.53	.98212	.345	.572	4527
-120.000	339.670	33.829	.02956	99.751	2327.87	173.59	176.06	1.01711	.347	.582	4253
-100.000	359.670	32.955	.03034	89.562	2009.68	185.27	187.80	1.05070	.348	.593	3981
-80.000	379.670	32.043	.03121	80.152	1714.42	197.20	199.80	1.08317	.351	.607	3708
-60.000	399.670	31.081	.03217	71.387	1439.86	209.44	212.12	1.11479	.354	.625	3432
-40.000	419.670	30.054	.03327	63.143	1184.19	222.06	224.84	1.14583	.358	.647	3151
-20.000	439.670	28.939	.03456	55.297	945.91	235.18	238.06	1.17660	.362	.676	2861
-.000	459.670	27.700	.03610	47.713	723.64	248.95	251.95	1.20750	.367	.716	2557
20.000	479.670	26.272	.03806	40.210	515.85	263.75	266.92	1.23937	.378	.782	2222
40.000	499.670	24.509	.04080	32.464	319.95	280.13	283.53	1.27328	.386	.894	1851
52.241	511.911	23.095	.04330	27.253	203.02	291.66	295.27	1.29647	.393	1.043	1579
52.241	511.911	4.0322	.2480	2.1654	49.97	384.76	405.42	1.51170	.412	.960	733
60.000	519.670	3.7514	.2666	1.9274	62.80	390.00	412.21	1.52649	.400	.804	765
80.000	539.670	3.2868	.3042	1.5836	87.60	401.18	426.54	1.55354	.392	.657	824
100.000	559.670	2.9830	.3352	1.3810	107.13	411.11	439.04	1.57630	.394	.601	870
120.000	579.670	2.7564	.3628	1.2396	123.96	420.53	450.76	1.59687	.399	.574	909
140.000	599.670	2.5762	.3882	1.1325	139.05	429.74	462.09	1.61609	.406	.560	942
160.000	619.670	2.4270	.4120	1.0475	152.92	438.89	473.22	1.63435	.414	.554	973
180.000	639.670	2.3000	.4348	.9776	165.88	448.05	484.28	1.65192	.423	.552	1001
200.000	659.670	2.1898	.4567	.9187	178.13	457.28	495.33	1.66893	.433	.554	1027
220.000	679.670	2.0927	.4779	.8682	189.81	466.62	506.44	1.68552	.443	.557	1051
240.000	699.670	2.0061	.4985	.8241	201.02	476.09	517.63	1.70174	.453	.562	1074
260.000	719.670	1.9281	.5186	.7853	211.84	485.71	528.92	1.71766	.464	.568	1096
280.000	739.670	1.8574	.5384	.7508	222.33	495.49	540.35	1.73332	.474	.575	1117
300.000	759.670	1.7927	.5578	.7197	232.53	505.44	551.92	1.74875	.485	.582	1137
320.000	779.670	1.7333	.5769	.6916	242.48	515.57	563.64	1.76398	.495	.590	1156
340.000	799.670	1.6784	.5958	.6660	252.22	525.88	575.53	1.77903	.506	.598	1175
360.000	819.670	1.6275	.6144	.6426	261.76	536.38	587.58	1.79392	.517	.607	1193
380.000	839.670	1.5801	.6329	.6210	271.14	547.07	599.80	1.80866	.527	.616	1211
400.000	859.670	1.5356	.6511	.6011	280.36	557.95	612.21	1.82325	.538	.625	1228
420.000	879.670	1.4943	.6692	.5825	289.45	569.02	624.78	1.83772	.548	.633	1245
440.000	899.670	1.4552	.6872	.5653	298.41	580.28	637.54	1.85206	.558	.642	1261
460.000	919.670	1.4184	.7050	.5492	307.27	591.73	650.48	1.86628	.568	.651	1277
480.000	939.670	1.3837	.7227	.5341	316.02	603.38	663.60	1.88039	.578	.660	1292
500.000	959.670	1.3508	.7403	.5199	324.68	615.21	676.90	1.89440	.588	.669	1308
520.000	979.670	1.3195	.7578	.5066	333.26	627.23	690.38	1.90830	.598	.678	1323
540.000	999.670	1.2899	.7753	.4940	341.76	639.43	704.03	1.92210	.608	.687	1338
560.000	1019.670	1.2617	.7926	.4820	350.18	651.83	717.87	1.93580	.618	.696	1352
580.000	1039.670	1.2348	.8098	.4707	358.54	664.40	731.88	1.94941	.627	.705	1366
600.000	1059.670	1.2092	.8270	.4600	366.84	677.16	746.07	1.96293	.636	.714	1380
640.000	1099.670	1.1612	.8612	.4401	383.28	703.20	774.97	1.98970	.655	.731	1408
680.000	1139.670	1.1171	.8952	.4220	399.52	729.96	804.55	2.01612	.673	.748	1434
720.000	1179.670	1.0765	.9289	.4054	415.59	757.40	834.81	2.04221	.690	.765	1460
760.000	1219.670	1.0389	.9625	.3902	431.51	785.52	865.72	2.06798	.707	.781	1485
800.000	1259.670	1.0041	.9960	.3762	447.30	814.30	897.29	2.09345	.724	.797	1510

Table 27. Continued.

ETHANE ISOBAR AT P = 500 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-296.042	163.628	40.736	.02455	249.729	6649.10	76.28	78.55	.61311	.369	.540	6717
-280.000	179.670	40.133	.02492	230.206	6122.25	84.93	87.23	.66375	.364	.543	6503
-260.000	199.670	39.380	.02539	207.485	5497.27	95.76	98.11	.72115	.358	.545	6224
-240.000	219.670	38.622	.02589	186.866	4918.94	106.63	109.03	.77327	.353	.547	5939
-220.000	239.670	37.859	.02641	168.324	4389.11	117.55	120.00	.82103	.350	.550	5653
-200.000	259.670	37.088	.02696	151.688	3905.15	128.52	131.02	.86521	.347	.553	5369
-180.000	279.670	36.305	.02754	136.745	3462.79	139.58	142.13	.90641	.346	.558	5088
-160.000	299.670	35.507	.02816	123.276	3057.50	150.73	153.34	.94514	.345	.564	4810
-140.000	319.670	34.690	.02883	111.081	2684.98	162.02	164.69	.98181	.346	.572	4536
-120.000	339.670	33.850	.02954	99.976	2341.40	173.48	176.21	1.01676	.347	.581	4263
-100.000	359.670	32.980	.03032	89.798	2023.52	185.14	187.95	1.05032	.349	.593	3992
-80.000	379.670	32.072	.03118	80.402	1728.64	197.05	199.93	1.08275	.351	.607	3720
-60.000	399.670	31.115	.03214	71.655	1454.54	209.26	212.23	1.11432	.354	.624	3446
-40.000	419.670	30.096	.03323	63.436	1199.45	221.84	224.92	1.14528	.358	.646	3166
-20.000	439.670	28.991	.03449	55.624	961.89	234.90	238.09	1.17595	.362	.674	2879
-.000	459.670	27.768	.03601	48.090	740.58	248.59	251.93	1.20671	.367	.712	2579
20.000	479.670	26.367	.03793	40.668	534.18	263.27	266.78	1.23834	.378	.774	2250
40.000	499.670	24.661	.04055	33.079	340.63	279.40	283.15	1.27176	.386	.875	1890
60.000	519.670	22.245	.04495	24.527	153.93	298.67	302.83	1.31034	.399	1.159	1439
60.755	520.425	22.123	.04520	24.152	146.76	299.53	303.71	1.31204	.399	1.182	1418
60.755	520.425	4.6908	.2132	2.6138	40.52	383.48	403.22	1.50331	.428	1.167	715
80.000	539.670	3.9144	.2555	1.9759	71.99	396.86	420.51	1.53759	.402	.755	791
100.000	559.670	3.4786	.2875	1.6685	94.77	407.79	434.41	1.56289	.399	.651	845
120.000	579.670	3.1776	.3147	1.4716	113.57	417.79	446.92	1.58486	.403	.606	889
140.000	599.670	2.9479	.3392	1.3293	130.05	427.38	458.78	1.60498	.409	.583	926
160.000	619.670	2.7627	.3620	1.2195	144.98	436.79	470.31	1.62388	.417	.571	959
180.000	639.670	2.6080	.3834	1.1312	158.80	446.17	481.67	1.64192	.425	.566	989
200.000	659.670	2.4756	.4039	1.0580	171.75	455.57	492.97	1.65932	.435	.565	1016
220.000	679.670	2.3602	.4237	.9960	184.03	465.04	504.27	1.67620	.444	.566	1042
240.000	699.670	2.2581	.4428	.9425	195.76	474.63	515.63	1.69267	.455	.570	1066
260.000	719.670	2.1669	.4615	.8957	207.04	484.34	527.07	1.70879	.465	.575	1089
280.000	739.670	2.0845	.4797	.8543	217.93	494.21	538.62	1.72463	.475	.581	1110
300.000	759.670	2.0097	.4976	.8174	228.49	504.23	550.30	1.74021	.486	.587	1131
320.000	779.670	1.9411	.5152	.7841	238.77	514.43	562.13	1.75557	.496	.595	1151
340.000	799.670	1.8780	.5325	.7539	248.80	524.80	574.10	1.77073	.507	.603	1170
360.000	819.670	1.8197	.5495	.7264	258.62	535.35	586.23	1.78572	.517	.611	1189
380.000	839.670	1.7655	.5664	.7012	268.24	546.09	598.53	1.80054	.528	.619	1207
400.000	859.670	1.7150	.5831	.6780	277.70	557.01	611.00	1.81522	.538	.628	1225
420.000	879.670	1.6677	.5996	.6564	287.00	568.12	623.64	1.82975	.548	.636	1242
440.000	899.670	1.6234	.6160	.6365	296.16	579.42	636.45	1.84416	.559	.645	1258
460.000	919.670	1.5817	.6322	.6178	305.20	590.91	649.44	1.85844	.569	.654	1275
480.000	939.670	1.5423	.6484	.6004	314.13	602.58	662.61	1.87260	.579	.663	1290
500.000	959.670	1.5052	.6644	.5841	322.95	614.44	675.96	1.88665	.589	.672	1306
520.000	979.670	1.4699	.6803	.5688	331.68	626.49	689.48	1.90060	.599	.680	1321
540.000	999.670	1.4365	.6961	.5543	340.32	638.72	703.17	1.91444	.608	.689	1336
560.000	1019.670	1.4047	.7119	.5406	348.89	651.14	717.05	1.92818	.618	.698	1351
580.000	1039.670	1.3745	.7275	.5277	357.38	663.73	731.09	1.94182	.627	.707	1365
600.000	1059.670	1.3456	.7431	.5155	365.80	676.51	745.31	1.95537	.637	.715	1379
640.000	1099.670	1.2918	.7741	.4928	382.46	702.60	774.27	1.98219	.655	.733	1407
680.000	1139.670	1.2424	.8049	.4722	398.91	729.38	803.91	2.00866	.673	.749	1434
720.000	1179.670	1.1969	.8355	.4534	415.16	756.86	834.22	2.03480	.690	.766	1460
760.000	1219.670	1.1549	.8659	.4361	431.25	785.01	865.18	2.06061	.707	.782	1486
800.000	1259.670	1.1159	.8962	.4203	447.20	813.81	896.78	2.08610	.724	.798	1511

ETHANE ISOBAR AT P = 550 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-295.942	163.728	40.739	.02455	249.746	6656.19	76.30	78.80	.61323	.369	.540	6720
-280.000	179.670	40.141	.02491	230.362	6133.40	84.89	87.43	.66353	.364	.543	6508
-260.000	199.670	39.389	.02539	207.655	5509.02	95.72	98.30	.72093	.358	.545	6229
-240.000	219.670	38.633	.02588	187.045	4931.07	106.58	109.22	.77303	.353	.547	5945
-220.000	239.670	37.871	.02641	168.511	4401.51	117.49	120.18	.82079	.350	.549	5659
-200.000	259.670	37.100	.02695	151.882	3917.77	128.46	131.20	.86495	.347	.553	5376
-180.000	279.670	36.319	.02753	136.945	3475.60	139.50	142.30	.90613	.346	.558	5096
-160.000	299.670	35.523	.02815	123.484	3070.52	150.64	153.51	.94484	.345	.564	4819
-140.000	319.670	34.709	.02881	111.297	2698.22	161.92	164.86	.98149	.346	.571	4545
-120.000	339.670	33.871	.02952	100.201	2354.91	173.36	176.37	1.01642	.347	.581	4273
-100.000	359.670	33.005	.03030	90.034	2037.34	185.01	188.09	1.04995	.349	.592	4003
-80.000	379.670	32.101	.03115	80.651	1742.82	196.89	200.06	1.08233	.351	.606	3732
-60.000	399.670	31.150	.03210	71.922	1469.17	209.07	212.34	1.11385	.354	.623	3459
-40.000	419.670	30.137	.03318	63.727	1214.63	221.62	225.00	1.14475	.358	.644	3182
-20.000	439.670	29.043	.03443	55.948	977.77	234.63	238.14	1.17532	.362	.671	2897
-.000	459.670	27.835	.03593	48.461	757.37	248.25	251.90	1.20594	.367	.708	2600
20.000	479.670	26.459	.03779	41.114	552.26	262.80	266.65	1.23734	.378	.767	2277
40.000	499.670	24.803	.04032	33.664	360.78	278.70	282.81	1.27032	.386	.858	1927
60.000	519.670	22.546	.04435	25.504	178.91	297.28	301.80	1.30756	.398	1.086	1564
68.638	528.308	21.067	.04747	21.174	99.20	307.46	312.29	1.32758	.407	1.403	1259
68.638	528.308	5.4593	.1832	3.1604	30.90	381.48	400.13	1.49392	.447	1.508	695
80.000	539.670	4.7085	.2124	2.5099	54.34	391.48	413.11	1.51986	.416	.938	753
100.000	559.670	4.0459	.2472	2.0152	81.70	404.06	429.23	1.54922	.406	.721	819
120.000	579.670	3.6400	.2747	1.7377	102.86	414.81	442.79	1.57304	.408	.645	868
140.000	599.670	3.3466	.2988	1.5487	120.90	424.87	455.30	1.59425	.413	.609	909
160.000	619.670	3.1174	.3208	1.4079	136.98	434.60	467.27	1.61389	.419	.590	945
180.000	639.670	2.9301	.3413	1.2972	151.70	444.21	478.97	1.63247	.428	.581	976
200.000	659.670	2.7723	.3607	1.2071	165.39	453.80	490.54	1.65028	.437	.577	1006
220.000	679.670	2.6362	.3793	1.1316	178.29	463.42	502.06	1.66748	.446	.576	1032
240.000	699.670	2.5170	.3973	1.0673	190.55	473.13	513.59	1.68421	.456	.573	1058
260.000	719.670	2.4112	.4147	1.0115	202.29	482.95	525.19	1.70055	.466	.582	1081
280.000	739.670	2.3163	.4317	.9625	213.59	492.91	536.88	1.71657	.476	.587	1104
300.000	759.670	2.2304	.4483	.9190	224.51	503.01	548.67	1.73231	.487	.593	1125
320.000	779.670	2.1522	.4646	.8800	235.12	513.28	560.60	1.74780	.497	.600	1146
340.000	799.670	2.0804	.4807	.8449	245.45	523.71	572.66	1.76308	.507	.607	1166
360.000	819.670	2.0142	.4965	.8130	255.54	534.32	584.88	1.77817	.518	.615	1185
380.000	839.670	1.9529	.5121	.7838	265.41	545.10	597.25	1.79308	.528	.623	1203
400.000	859.670	1.8959	.5275	.7570	275.10	556.07	609.79	1.80784	.539	.631	1221
420.000	879.670	1.8427	.5427	.7323	284.61	567.22	622.49	1.82245	.549	.639	1239
440.000	899.670	1.7929	.5578	.7094	293.97	578.56	635.36	1.83691	.559	.648	1256
460.000	919.670	1.7461	.5727	.6881	303.20	590.08	648.41	1.85125	.569	.657	1272
480.000	939.670	1.7020	.5875	.6682	312.30	601.79	661.62	1.86547	.579	.665	1288
500.000	959.670	1.6604	.6023	.6496	321.28	613.68	675.01	1.87957	.589	.674	1304
520.000	979.670	1.6210	.6169	.6322	330.16	625.75	688.58	1.89356	.599	.683	1320
540.000	999.670	1.5837	.6314	.6158	338.95	638.01	702.31	1.90744	.609	.691	1335
560.000	1019.670	1.5483	.6459	.6003	347.65	650.45	716.22	1.92122	.618	.700	1350
580.000	1039.670	1.5146	.6602	.5857	356.26	663.07	730.31	1.93489	.628	.708	1364
600.000	1059.670	1.4825	.6745	.5718	364.81	675.86	744.56	1.94847	.637	.717	1379
640.000	1099.670	1.4226	.7029	.5462	381.69	701.99	773.58	1.97535	.655	.734	1407
680.000	1139.670	1.3678	.7311	.5230	398.34	728.81	803.27	2.00187	.673	.751	1434
720.000	1179.670	1.3174	.7591	.5019	414.78	756.32	833.63	2.02805	.691	.767	1460
760.000	1219.670	1.2708	.7869	.4826	431.04	784.49	864.63	2.05390	.708	.783	1486
800.000	1259.670	1.2277	.8145	.4648	447.14	813.32	896.28	2.07943	.724	.799	1511

Table 27. Continued.

ETHANE ISOBAR AT P = 600 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-295.843	163.827	40.743	.02454	249.763	6663.28	76.32	79.04	.61335	.369	.540	6723
-280.000	179.670	40.149	.02491	230.518	6144.54	84.85	87.62	.66331	.364	.543	6513
-260.000	199.670	39.398	.02538	207.824	5520.75	95.67	98.49	.72070	.358	.545	6235
-240.000	219.670	38.643	.02588	187.224	4943.19	106.53	109.41	.77280	.354	.547	5950
-220.000	239.670	37.882	.02640	168.698	4413.90	117.43	120.37	.82054	.350	.549	5666
-200.000	259.670	37.113	.02694	152.076	3930.37	128.39	131.38	.86469	.347	.553	5383
-180.000	279.670	36.333	.02752	137.146	3488.41	139.42	142.48	.90586	.346	.557	5103
-160.000	299.670	35.539	.02814	123.691	3083.52	150.56	153.68	.94455	.345	.563	4827
-140.000	319.670	34.727	.02880	111.511	2711.45	161.82	165.02	.98117	.346	.571	4554
-120.000	339.670	33.893	.02951	100.424	2368.39	173.25	176.53	1.01608	.347	.580	4283
-100.000	359.670	33.029	.03028	90.268	2051.12	184.87	188.24	1.04957	.349	.591	4013
-80.000	379.670	32.129	.03112	80.899	1756.96	196.74	200.19	1.08192	.351	.605	3744
-60.000	399.670	31.183	.03207	72.187	1483.75	208.89	212.45	1.11338	.354	.622	3472
-40.000	419.670	30.178	.03314	64.015	1229.74	221.40	225.08	1.14421	.358	.642	3197
-20.000	439.670	29.094	.03437	56.267	993.55	234.36	238.18	1.17470	.362	.669	2915
-.000	459.670	27.900	.03584	48.826	774.02	247.91	251.89	1.20518	.367	.704	2621
20.000	479.670	26.548	.03767	41.549	570.09	262.35	266.54	1.23637	.378	.760	2303
40.000	499.670	24.938	.04010	34.224	380.48	278.04	282.49	1.26895	.386	.844	1963
60.000	519.670	22.808	.04384	26.376	202.41	296.06	300.94	1.30511	.397	1.033	1562
75.969	535.639	19.856	.05036	18.216	59.37	315.76	321.36	1.34377	.416	1.823	1097
75.969	535.639	6.4047	.1561	3.8613	21.12	378.41	395.76	1.48276	.470	2.177	673
80.000	539.670	5.8663	.1705	3.3619	32.86	383.80	402.74	1.49737	.441	1.440	704
100.000	559.670	4.7163	.2120	2.4474	67.74	399.72	423.28	1.53479	.415	.827	790
120.000	579.670	4.1541	.2407	2.0470	91.80	411.55	438.30	1.56117	.413	.697	847
140.000	599.670	3.7768	.2648	1.7949	111.60	422.19	451.60	1.58375	.416	.641	892
160.000	619.670	3.4936	.2862	1.6148	128.93	432.31	464.11	1.60426	.422	.612	930
180.000	639.670	3.2677	.3060	1.4769	144.60	442.19	476.19	1.62344	.430	.597	964
200.000	659.670	3.0805	.3246	1.3666	159.06	451.98	488.04	1.64170	.438	.590	995
220.000	679.670	2.9212	.3423	1.2757	172.59	461.77	499.80	1.65925	.448	.587	1023
240.000	699.670	2.7830	.3593	1.1989	185.39	471.61	511.53	1.67626	.457	.587	1050
260.000	719.670	2.6613	.3758	1.1330	197.60	481.54	523.29	1.69283	.467	.589	1074
280.000	739.670	2.5528	.3917	1.0755	209.31	491.59	535.11	1.70904	.477	.593	1098
300.000	759.670	2.4551	.4073	1.0248	220.61	501.78	547.03	1.72494	.488	.599	1120
320.000	779.670	2.3665	.4226	.9796	231.54	512.11	559.06	1.74057	.498	.605	1141
340.000	799.670	2.2855	.4375	.9390	242.17	522.61	571.22	1.75597	.508	.611	1161
360.000	819.670	2.2110	.4523	.9023	252.53	533.27	583.52	1.77116	.519	.619	1181
380.000	839.670	2.1423	.4668	.8689	262.65	544.11	595.97	1.78617	.529	.626	1200
400.000	859.670	2.0785	.4811	.8382	272.57	555.12	608.58	1.80101	.539	.634	1218
420.000	879.670	2.0191	.4953	.8101	282.29	566.32	621.34	1.81569	.550	.642	1236
440.000	899.670	1.9636	.5093	.7841	291.85	577.69	634.28	1.83022	.560	.651	1253
460.000	919.670	1.9115	.5231	.7599	301.25	589.25	647.37	1.84462	.570	.659	1270
480.000	939.670	1.8625	.5369	.7375	310.52	600.99	660.64	1.85889	.580	.668	1287
500.000	959.670	1.8164	.5505	.7165	319.67	612.91	674.07	1.87304	.590	.676	1303
520.000	979.670	1.7728	.5641	.6968	328.70	625.01	687.68	1.88707	.599	.685	1318
540.000	999.670	1.7315	.5775	.6783	337.63	637.29	701.46	1.90099	.609	.693	1334
560.000	1019.670	1.6924	.5909	.6610	346.46	649.76	715.41	1.91481	.619	.702	1349
580.000	1039.670	1.6552	.6042	.6446	355.20	662.40	729.52	1.92852	.628	.710	1364
600.000	1059.670	1.6198	.6174	.6290	363.86	675.22	743.81	1.94213	.637	.719	1378
640.000	1099.670	1.5537	.6436	.6004	380.97	701.38	772.89	1.96907	.656	.735	1407
680.000	1139.670	1.4934	.6696	.5745	397.82	728.24	802.64	1.99563	.673	.752	1434
720.000	1179.670	1.4380	.6954	.5510	414.44	755.78	833.04	2.02185	.691	.768	1461
760.000	1219.670	1.3868	.7211	.5295	430.85	783.98	864.09	2.04774	.708	.784	1487
800.000	1259.670	1.3395	.7465	.5098	447.11	812.84	895.78	2.07330	.725	.800	1512

Table 27. Continued.

ETHANE ISOBAR AT P = 650 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-295.743	163.927	40.747	.02454	249.781	6670.37	76.34	79.29	.61347	.369	.540	6726
-280.000	179.670	40.157	.02490	230.673	6155.67	84.81	87.81	.66310	.364	.543	6518
-260.000	199.670	39.407	.02538	207.993	5532.47	95.63	98.68	.72048	.359	.545	6240
-240.000	219.670	38.653	.02587	187.403	4955.29	106.48	109.60	.77256	.354	.547	5956
-220.000	239.670	37.893	.02639	168.885	4426.28	117.38	120.55	.82029	.350	.549	5672
-200.000	259.670	37.126	.02694	152.270	3942.97	128.32	131.57	.86443	.347	.552	5390
-180.000	279.670	36.349	.02751	137.346	3501.19	139.35	142.66	.90558	.346	.557	5111
-160.000	299.670	35.556	.02813	123.898	3096.51	150.47	153.86	.94425	.345	.563	4835
-140.000	319.670	34.746	.02878	111.725	2724.65	161.72	165.19	.98086	.346	.570	4563
-120.000	339.670	33.914	.02949	100.647	2381.84	173.14	176.68	1.01574	.347	.580	4293
-100.000	359.670	33.053	.03025	90.501	2064.87	184.74	188.38	1.04920	.349	.591	4024
-80.000	379.670	32.158	.03110	81.145	1771.07	196.58	200.33	1.08151	.351	.604	3756
-60.000	399.670	31.217	.03203	72.451	1498.27	208.71	212.56	1.11292	.354	.620	3486
-40.000	419.670	30.218	.03309	64.301	1244.78	221.18	225.17	1.14369	.358	.641	3212
-20.000	439.670	29.143	.03431	56.584	1009.23	234.10	238.23	1.17408	.362	.666	2932
-.000	459.670	27.964	.03576	49.185	790.52	247.57	251.88	1.20444	.367	.701	2642
20.000	479.670	26.635	.03754	41.974	587.71	261.91	266.43	1.23542	.378	.754	2328
40.000	499.670	25.067	.03989	34.763	399.76	277.41	282.21	1.26764	.386	.831	1997
60.000	519.670	23.043	.04340	27.170	224.81	294.97	300.19	1.30290	.396	.991	1614
80.000	539.670	19.470	.05136	17.458	54.32	319.10	325.28	1.35019	.419	1.893	1067
82.801	542.471	18.315	.05460	15.086	26.79	325.17	331.74	1.36213	.433	2.978	923
82.801	542.471	7.6994	.1299	4.8588	11.19	373.43	389.06	1.46789	.507	4.083	646
100.000	559.670	5.5499	.1802	3.0142	52.64	394.45	416.13	1.51879	.426	1.007	759
120.000	579.670	4.7355	.2112	2.4122	80.38	407.92	433.34	1.54902	.418	.765	825
140.000	599.670	4.2449	.2356	2.0731	102.17	419.31	447.67	1.57333	.420	.679	874
160.000	619.670	3.8941	.2568	1.8427	120.85	429.89	460.79	1.59486	.425	.638	916
180.000	639.670	3.6223	.2761	1.6716	137.51	440.08	473.31	1.61473	.432	.616	952
200.000	659.670	3.4013	.2940	1.5376	152.76	450.10	485.49	1.63348	.440	.604	985
220.000	679.670	3.2158	.3110	1.4287	166.95	460.07	497.49	1.65142	.449	.598	1014
240.000	699.670	3.0565	.3272	1.3378	180.30	470.05	509.43	1.66873	.459	.596	1042
260.000	719.670	2.9174	.3428	1.2604	192.98	480.10	521.36	1.68554	.468	.597	1067
280.000	739.670	2.7941	.3579	1.1935	205.11	490.25	533.33	1.70195	.478	.600	1091
300.000	759.670	2.6837	.3726	1.1348	216.77	500.53	545.36	1.71801	.488	.604	1114
320.000	779.670	2.5841	.3870	1.0828	228.04	510.94	557.52	1.73379	.499	.610	1136
340.000	799.670	2.4933	.4011	1.0363	238.96	521.50	569.77	1.74931	.509	.616	1157
360.000	819.670	2.4102	.4149	.9944	249.59	532.22	582.16	1.76461	.519	.623	1177
380.000	839.670	2.3336	.4285	.9564	259.96	543.11	594.69	1.77971	.530	.630	1197
400.000	859.670	2.2628	.4419	.9217	270.10	554.17	607.37	1.79463	.540	.638	1215
420.000	879.670	2.1969	.4552	.8899	280.04	565.41	620.20	1.80939	.550	.645	1233
440.000	899.670	2.1355	.4683	.8605	289.79	576.82	633.19	1.82399	.560	.654	1251
460.000	919.670	2.0780	.4812	.8334	299.38	588.42	646.34	1.83844	.570	.662	1268
480.000	939.670	2.0240	.4941	.8082	308.81	600.19	659.65	1.85277	.580	.670	1285
500.000	959.670	1.9732	.5068	.7846	318.12	612.14	673.14	1.86697	.590	.678	1301
520.000	979.670	1.9253	.5194	.7627	327.30	624.27	686.79	1.88104	.600	.687	1317
540.000	999.670	1.8799	.5319	.7420	336.36	636.58	700.60	1.89501	.609	.695	1333
560.000	1019.670	1.8369	.5444	.7227	345.33	649.07	714.59	1.90886	.619	.703	1348
580.000	1039.670	1.7961	.5567	.7044	354.19	661.73	728.74	1.92260	.628	.712	1363
600.000	1059.670	1.7573	.5690	.6872	362.97	674.57	743.06	1.93625	.638	.720	1378
640.000	1099.670	1.6851	.5934	.6554	380.30	700.78	772.20	1.96324	.656	.737	1406
680.000	1139.670	1.6192	.6176	.6267	397.34	727.67	802.01	1.98986	.674	.753	1434
720.000	1179.670	1.5587	.6416	.6007	414.14	755.24	832.46	2.01612	.691	.769	1461
760.000	1219.670	1.5029	.6654	.5770	430.73	783.47	863.55	2.04204	.708	.785	1487
800.000	1259.670	1.4513	.6890	.5552	447.13	812.35	895.28	2.06764	.725	.801	1513

Table 27. Continued.

ETHANE ISOBAR AT P = 700 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-295.643	164.027	40.751	.02454	249.798	6677.46	76.36	79.54	.61359	.369	.540	6728
-280.000	179.670	40.165	.02490	230.829	6166.78	84.78	88.00	.66288	.364	.542	6522
-260.000	199.670	39.416	.02537	208.162	5544.19	95.58	98.87	.72025	.359	.545	6245
-240.000	219.670	38.663	.02586	187.582	4967.39	106.43	109.78	.77233	.354	.546	5962
-220.000	239.670	37.905	.02638	169.071	4438.64	117.32	120.74	.82005	.350	.549	5679
-200.000	259.670	37.138	.02693	152.463	3955.55	128.26	131.75	.86417	.347	.552	5397
-180.000	279.670	36.362	.02750	137.545	3513.97	139.27	142.84	.90531	.346	.557	5118
-160.000	299.670	35.572	.02811	124.104	3109.48	150.38	154.03	.94396	.345	.563	4843
-140.000	319.670	34.764	.02877	111.938	2737.83	161.62	165.35	.98054	.346	.570	4572
-120.000	339.670	33.935	.02947	100.868	2395.27	173.02	176.84	1.01540	.347	.579	4303
-100.000	359.670	33.078	.03023	90.733	2078.58	184.61	188.53	1.04883	.349	.590	4035
-80.000	379.670	32.186	.03107	81.390	1785.13	196.43	200.46	1.08110	.351	.603	3768
-60.000	399.670	31.250	.03200	72.713	1512.76	208.53	212.68	1.11246	.354	.619	3499
-40.000	419.670	30.258	.03305	64.584	1259.76	220.97	225.25	1.14317	.358	.639	3227
-20.000	439.670	29.193	.03426	56.896	1024.82	233.84	238.28	1.17347	.362	.664	2949
-.000	459.670	28.027	.03568	49.539	806.89	247.25	251.87	1.20371	.368	.697	2662
20.000	479.670	26.719	.03743	42.390	605.12	261.49	266.34	1.23450	.378	.748	2353
40.000	499.670	25.189	.03970	35.282	418.67	276.80	281.95	1.26638	.386	.820	2029
60.000	519.670	23.255	.04300	27.904	246.32	293.97	299.54	1.30088	.396	.958	1662
80.000	539.670	20.199	.04951	19.190	84.12	315.94	322.36	1.34391	.414	1.486	1183
89.141	548.811	15.337	.06520	10.740	2.22	340.26	348.72	1.39221	.521	23.018	673
89.141	548.811	10.4078	.0961	6.9957	1.21	361.26	373.71	1.43785	.650	38.518	577
100.000	559.670	6.6874	.1495	3.8297	36.03	387.50	406.88	1.49953	.441	1.385	723
120.000	579.670	5.4078	.1849	2.8526	68.61	403.82	427.79	1.53628	.425	.860	802
140.000	599.670	4.7585	.2101	2.3898	92.64	416.21	443.45	1.56285	.424	.727	857
160.000	619.670	4.3224	.2314	2.0948	112.75	427.33	457.32	1.58561	.428	.667	902
180.000	639.670	3.9955	.2503	1.8831	130.46	437.88	470.32	1.60627	.435	.636	940
200.000	659.670	3.7355	.2677	1.7210	146.52	448.16	482.86	1.62557	.442	.619	974
220.000	679.670	3.5204	.2841	1.5913	161.37	458.32	495.14	1.64391	.451	.610	1005
240.000	699.670	3.3378	.2996	1.4843	175.28	468.46	507.30	1.66154	.460	.606	1034
260.000	719.670	3.1795	.3145	1.3941	188.44	478.64	519.41	1.67860	.470	.605	1061
280.000	739.670	3.0404	.3289	1.3167	200.98	488.90	531.53	1.69522	.479	.607	1086
300.000	759.670	2.9164	.3429	1.2492	213.01	499.26	543.71	1.71146	.489	.611	1109
320.000	779.670	2.8050	.3565	1.1898	224.61	509.75	555.96	1.72738	.500	.615	1132
340.000	799.670	2.7039	.3698	1.1369	235.83	520.38	568.32	1.74303	.510	.621	1153
360.000	819.670	2.6117	.3829	1.0894	246.73	531.17	580.80	1.75844	.520	.627	1174
380.000	839.670	2.5270	.3957	1.0465	257.34	542.11	593.40	1.77364	.530	.634	1193
400.000	859.670	2.4487	.4084	1.0074	267.71	553.22	606.15	1.78865	.540	.641	1212
420.000	879.670	2.3762	.4208	.9717	277.85	564.50	619.05	1.80347	.551	.649	1231
440.000	899.670	2.3086	.4332	.9388	287.79	575.95	632.10	1.81814	.561	.656	1249
460.000	919.670	2.2455	.4453	.9085	297.56	587.58	645.31	1.83266	.571	.664	1266
480.000	939.670	2.1864	.4574	.8803	307.17	599.39	658.67	1.84704	.581	.672	1283
500.000	959.670	2.1308	.4693	.8542	316.62	611.37	672.20	1.86129	.590	.681	1300
520.000	979.670	2.0783	.4812	.8297	325.95	623.53	685.89	1.87541	.600	.689	1316
540.000	999.670	2.0288	.4929	.8069	335.15	635.86	699.75	1.88941	.610	.697	1332
560.000	1019.670	1.9820	.5045	.7854	344.25	648.38	713.78	1.90330	.619	.705	1347
580.000	1039.670	1.9375	.5161	.7652	353.24	661.06	727.96	1.91708	.629	.714	1363
600.000	1059.670	1.8953	.5276	.7462	362.13	673.93	742.32	1.93076	.638	.722	1377
640.000	1099.670	1.8167	.5505	.7111	379.67	700.17	771.52	1.95781	.656	.738	1406
680.000	1139.670	1.7451	.5730	.6795	396.91	727.10	801.38	1.98447	.674	.755	1434
720.000	1179.670	1.6794	.5954	.6510	413.89	754.70	831.88	2.01078	.691	.771	1462
760.000	1219.670	1.6190	.6177	.6249	430.63	782.96	863.02	2.03674	.708	.786	1488
800.000	1259.670	1.5631	.6397	.6011	447.18	811.86	894.79	2.06237	.725	.802	1514

Table 27. Continued.

ETHANE ISOBAR AT P = 710 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-295.624	164.046	40.752	.02454	249.802	6678.88	76.36	79.59	.61361	.369	.540	6729
-280.000	179.670	40.167	.02490	230.860	6169.00	84.77	88.04	.66284	.364	.542	6523
-260.000	199.670	39.418	.02537	208.195	5546.53	95.58	98.91	.72021	.359	.545	6246
-240.000	219.670	38.665	.02586	187.617	4969.81	106.42	109.82	.77228	.354	.546	5963
-220.000	239.670	37.907	.02638	169.108	4441.11	117.31	120.77	.82000	.350	.549	5680
-200.000	259.670	37.141	.02692	152.501	3958.06	128.24	131.78	.86412	.347	.552	5398
-180.000	279.670	36.365	.02750	137.585	3516.52	139.26	142.87	.90525	.346	.557	5120
-160.000	299.670	35.575	.02811	124.145	3112.07	150.37	154.06	.94390	.346	.563	4845
-140.000	319.670	34.768	.02876	111.981	2740.47	161.61	165.39	.98048	.346	.570	4574
-120.000	339.670	33.939	.02946	100.913	2397.95	173.00	176.87	1.01533	.347	.579	4304
-100.000	359.670	33.082	.03023	90.779	2081.32	184.59	188.56	1.04875	.349	.590	4037
-80.000	379.670	32.191	.03105	81.439	1787.93	196.40	200.49	1.08102	.351	.603	3770
-60.000	399.670	31.257	.03199	72.765	1515.65	208.49	212.70	1.11237	.354	.619	3502
-40.000	419.670	30.266	.03304	64.640	1262.74	220.93	225.27	1.14306	.358	.639	3230
-20.000	439.670	29.202	.03424	56.958	1027.92	233.79	238.29	1.17335	.362	.664	2953
-.000	459.670	28.039	.03566	49.609	810.15	247.18	251.87	1.20357	.368	.696	2666
20.000	479.670	26.735	.03740	42.472	608.57	261.40	266.32	1.23432	.378	.747	2358
40.000	499.670	25.213	.03966	35.383	422.41	276.69	281.90	1.26614	.386	.817	2035
60.000	519.670	23.295	.04293	28.045	250.54	293.78	299.42	1.30050	.396	.953	1671
80.000	539.670	20.315	.04923	19.475	89.56	315.44	321.91	1.34291	.413	1.438	1202
100.000	559.670	6.980	.14328	4.045	32.49	385.76	404.60	1.49497	.446	1.517	715
120.000	579.670	5.556	.17998	2.952	66.22	402.92	426.59	1.53362	.427	.884	797
140.000	599.670	4.868	.20544	2.459	90.73	415.56	442.57	1.56074	.425	.737	853
160.000	619.670	4.412	.22667	2.148	111.13	426.80	456.60	1.58377	.429	.674	899
180.000	639.670	4.073	.24554	1.928	129.06	437.43	469.71	1.60459	.435	.641	938
200.000	659.670	3.804	.26288	1.759	145.28	447.76	482.33	1.62401	.443	.622	972
220.000	679.670	3.583	.27913	1.625	160.27	457.97	494.67	1.64244	.451	.613	1004
240.000	699.670	3.395	.29455	1.515	174.29	468.14	506.87	1.66013	.460	.608	1032
260.000	719.670	3.233	.30933	1.422	187.54	478.35	519.02	1.67725	.470	.607	1059
280.000	739.670	3.090	.32360	1.342	200.17	488.63	531.17	1.69391	.480	.609	1084
300.000	759.670	2.963	.33744	1.273	212.27	499.01	543.37	1.71019	.490	.612	1108
320.000	779.670	2.850	.35093	1.212	223.93	509.51	555.65	1.72614	.500	.616	1131
340.000	799.670	2.746	.36411	1.157	235.21	520.16	568.03	1.74182	.510	.622	1152
360.000	819.670	2.652	.37704	1.109	246.16	530.95	580.52	1.75725	.520	.628	1173
380.000	839.670	2.566	.38973	1.065	256.83	541.91	593.15	1.77247	.530	.635	1193
400.000	859.670	2.486	.40223	1.025	267.24	553.03	605.91	1.78749	.541	.642	1212
420.000	879.670	2.412	.41456	.988	277.42	564.32	618.82	1.80233	.551	.649	1230
440.000	899.670	2.343	.42673	.955	287.40	575.78	631.88	1.81702	.561	.657	1249
460.000	919.670	2.279	.43876	.924	297.21	587.41	645.10	1.83155	.571	.665	1266
480.000	939.670	2.219	.45067	.895	306.84	599.23	658.48	1.84594	.581	.673	1283
500.000	959.670	2.162	.46246	.868	316.33	611.21	672.01	1.86019	.590	.681	1300
520.000	979.670	2.109	.47415	.843	325.69	623.38	685.72	1.87433	.600	.689	1316
540.000	999.670	2.059	.48575	.820	334.92	635.72	699.58	1.88834	.610	.697	1332
560.000	1019.670	2.011	.49726	.798	344.04	648.24	713.61	1.90223	.619	.706	1347
580.000	1039.670	1.966	.50869	.777	353.05	660.93	727.81	1.91602	.629	.714	1362
600.000	1059.670	1.923	.52006	.758	361.97	673.80	742.17	1.92970	.638	.722	1377
640.000	1099.670	1.843	.54259	.722	379.55	700.05	771.38	1.95676	.656	.739	1406
680.000	1139.670	1.770	.56489	.690	396.83	726.98	801.25	1.98344	.674	.755	1434
720.000	1179.670	1.704	.58699	.661	413.84	754.59	831.76	2.00975	.691	.771	1462
760.000	1219.670	1.642	.60893	.635	430.62	782.86	862.91	2.03572	.708	.787	1488
800.000	1259.670	1.586	.63071	.610	447.20	811.77	894.69	2.06135	.725	.802	1514

Table 27. Continued.

ETHANE ISOBAR AT P = 720 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-295.604	164.066	40.752	.02454	249.805	6680.29	76.36	79.63	.61364	.369	.540	6730
-280.000	179.670	40.169	.02490	230.891	6171.22	84.76	88.08	.66280	.364	.542	6524
-260.000	199.670	39.419	.02537	208.229	5548.87	95.57	98.95	.72016	.359	.545	6247
-240.000	219.670	38.667	.02586	187.653	4972.22	106.41	109.86	.77223	.354	.546	5965
-220.000	239.670	37.909	.02638	169.145	4443.59	117.29	120.81	.81995	.350	.549	5681
-200.000	259.670	37.144	.02692	152.540	3960.57	128.23	131.82	.86407	.347	.552	5400
-180.000	279.670	36.368	.02750	137.625	3519.07	139.24	142.91	.90520	.346	.557	5122
-160.000	299.670	35.578	.02811	124.186	3114.66	150.35	154.10	.94384	.346	.563	4847
-140.000	319.670	34.771	.02876	112.024	2743.10	161.59	165.42	.98042	.346	.570	4575
-120.000	339.670	33.943	.02946	100.957	2400.63	172.98	176.91	1.01526	.347	.579	4306
-100.000	359.670	33.087	.03022	90.826	2084.06	184.56	188.59	1.04868	.349	.590	4039
-80.000	379.670	32.197	.03106	81.488	1790.74	196.37	200.51	1.08094	.351	.603	3772
-60.000	399.670	31.263	.03199	72.817	1518.54	208.46	212.72	1.11228	.354	.619	3504
-40.000	419.670	30.274	.03303	64.697	1265.73	220.89	225.29	1.14296	.358	.639	3233
-20.000	439.670	29.212	.03423	57.020	1031.03	233.73	238.30	1.17323	.362	.663	2956
-.000	459.670	28.052	.03565	49.679	813.40	247.12	251.87	1.20342	.368	.696	2670
20.000	479.670	26.751	.03738	42.554	612.02	261.32	266.30	1.23414	.379	.746	2363
40.000	499.670	25.236	.03963	35.484	426.14	276.57	281.85	1.26589	.386	.815	2042
60.000	519.670	23.335	.04285	28.184	254.72	293.59	299.30	1.30012	.396	.947	1680
80.000	539.670	20.423	.04896	19.747	94.87	314.96	321.49	1.34196	.412	1.397	1220
100.000	559.670	7.306	.13688	4.288	28.86	383.85	402.10	1.49003	.450	1.687	707
120.000	579.670	5.710	.17513	3.056	63.82	402.00	425.35	1.53093	.428	.910	792
140.000	599.670	4.979	.20084	2.529	88.82	414.89	441.67	1.55862	.426	.749	850
160.000	619.670	4.502	.22211	2.203	109.52	426.27	455.88	1.58193	.430	.680	896
180.000	639.670	4.150	.24094	1.973	127.65	436.98	469.10	1.60293	.436	.645	935
200.000	659.670	3.873	.25819	1.798	144.05	447.37	481.79	1.62247	.443	.626	970
220.000	679.670	3.645	.27433	1.659	159.16	457.61	494.19	1.64098	.451	.615	1002
240.000	699.670	3.453	.28964	1.545	173.30	467.82	506.44	1.65874	.461	.610	1031
260.000	719.670	3.286	.30430	1.449	186.65	478.05	518.62	1.67592	.470	.609	1058
280.000	739.670	3.140	.31844	1.367	199.35	488.35	530.81	1.69262	.480	.610	1083
300.000	759.670	3.011	.33215	1.296	211.53	498.75	543.04	1.70893	.490	.613	1107
320.000	779.670	2.894	.34551	1.234	223.26	509.27	555.34	1.72492	.500	.617	1130
340.000	799.670	2.789	.35856	1.178	234.60	519.93	567.74	1.74062	.510	.623	1151
360.000	819.670	2.693	.37134	1.128	245.60	530.74	580.25	1.75607	.520	.629	1172
380.000	839.670	2.605	.38390	1.083	256.32	541.71	592.89	1.77131	.530	.635	1192
400.000	859.670	2.524	.39627	1.042	266.77	552.84	605.67	1.78635	.541	.642	1211
420.000	879.670	2.448	.40845	1.005	276.99	564.13	618.59	1.80121	.551	.650	1230
440.000	899.670	2.378	.42048	.971	287.02	575.60	631.66	1.81590	.561	.658	1248
460.000	919.670	2.313	.43237	.939	296.85	587.25	644.89	1.83045	.571	.665	1266
480.000	939.670	2.252	.44414	.910	306.52	599.06	658.28	1.84485	.581	.673	1283
500.000	959.670	2.194	.45579	.882	316.04	611.06	671.83	1.85911	.591	.681	1299
520.000	979.670	2.140	.46734	.857	325.43	623.23	685.54	1.87325	.600	.690	1316
540.000	999.670	2.089	.47880	.833	334.69	635.58	699.41	1.88727	.610	.698	1332
560.000	1019.670	2.040	.49017	.811	343.83	648.10	713.45	1.90118	.619	.706	1347
580.000	1039.670	1.994	.50147	.790	352.87	660.80	727.65	1.91497	.629	.714	1362
600.000	1059.670	1.951	.51269	.770	361.81	673.67	742.02	1.92866	.638	.722	1377
640.000	1099.670	1.869	.53494	.734	379.44	699.93	771.25	1.95573	.656	.739	1406
680.000	1139.670	1.795	.55696	.701	396.75	726.87	801.13	1.98242	.674	.755	1434
720.000	1179.670	1.728	.57878	.671	413.80	754.48	831.65	2.00874	.691	.771	1462
760.000	1219.670	1.665	.60044	.644	430.61	782.75	862.81	2.03471	.708	.787	1488
800.000	1259.670	1.608	.62194	.620	447.21	811.67	894.59	2.06035	.725	.802	1514

Table 27. Continued.

Table 27. Continued.

ETHANE ISOBAR AT P = 750 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-295.544	164.126	40.755	.02454	249.816	6684.55	76.38	79.78	.61371	.369	.540	6731
-280.000	179.670	40.174	.02489	230.984	6177.88	84.74	88.19	.66267	.364	.542	6527
-260.000	199.670	39.425	.02536	208.330	5555.89	95.54	99.06	.72003	.359	.544	6251
-240.000	219.670	38.673	.02586	187.760	4979.47	106.38	109.97	.77209	.354	.546	5968
-220.000	239.670	37.916	.02637	169.257	4451.00	117.26	120.92	.81980	.350	.549	5685
-200.000	259.670	37.151	.02692	152.655	3968.11	128.19	131.93	.86391	.348	.552	5404
-180.000	279.670	36.376	.02749	137.744	3526.73	139.20	143.01	.90503	.346	.557	5126
-160.000	299.670	35.588	.02810	124.309	3122.43	150.30	154.20	.94367	.346	.562	4852
-140.000	319.670	34.782	.02875	112.151	2751.00	161.53	165.52	.98023	.346	.570	4581
-120.000	339.670	33.955	.02945	101.089	2408.67	172.91	177.00	1.01506	.347	.579	4312
-100.000	359.670	33.101	.03021	90.964	2092.27	184.48	188.68	1.04846	.349	.589	4046
-80.000	379.670	32.214	.03104	81.634	1799.15	196.28	200.59	1.08069	.351	.602	3779
-60.000	399.670	31.283	.03197	72.973	1527.18	208.35	212.79	1.11201	.355	.618	3512
-40.000	419.670	30.298	.03301	64.865	1274.66	220.76	225.34	1.14265	.358	.638	3242
-20.000	439.670	29.241	.03420	57.205	1040.32	233.58	238.33	1.17288	.362	.662	2966
-.000	459.670	28.088	.03560	49.888	823.13	246.93	251.87	1.20299	.368	.694	2682
20.000	479.670	26.800	.03731	42.797	622.33	261.07	266.25	1.23361	.379	.742	2378
40.000	499.670	25.306	.03952	35.783	437.25	276.23	281.71	1.26518	.386	.809	2060
60.000	519.670	23.450	.04264	28.591	267.12	293.04	298.97	1.29902	.396	.931	1706
80.000	539.670	20.716	.04827	20.495	110.18	313.66	320.36	1.33938	.411	1.299	1270
100.000	559.670	8.621	.11599	5.283	17.61	376.40	392.51	1.47164	.468	2.678	683
120.000	579.670	6.209	.16106	3.399	56.59	399.05	421.42	1.52253	.433	1.001	778
140.000	599.670	5.328	.18768	2.754	83.08	412.83	438.89	1.55218	.429	.786	839
160.000	619.670	4.783	.20910	2.375	104.68	424.62	453.66	1.57642	.431	.702	888
180.000	639.670	4.389	.22782	2.113	123.47	435.59	467.23	1.59797	.437	.659	929
200.000	659.670	4.084	.24485	1.918	140.36	446.16	480.16	1.61788	.444	.636	964
220.000	679.670	3.836	.26071	1.764	155.88	456.53	492.74	1.63667	.452	.623	997
240.000	699.670	3.627	.27570	1.639	170.35	466.84	505.13	1.65464	.461	.617	1027
260.000	719.670	3.448	.29002	1.534	183.98	477.16	517.43	1.67197	.471	.614	1054
280.000	739.670	3.292	.30380	1.445	196.94	487.52	529.71	1.68881	.480	.615	1080
300.000	759.670	3.153	.31714	1.368	209.34	497.98	542.03	1.70523	.490	.617	1104
320.000	779.670	3.029	.33011	1.301	221.26	508.55	554.40	1.72130	.500	.621	1127
340.000	799.670	2.917	.34278	1.241	232.77	519.25	566.86	1.73709	.511	.626	1149
360.000	819.670	2.815	.35518	1.187	243.94	530.10	579.43	1.75261	.521	.631	1170
380.000	839.670	2.722	.36735	1.139	254.80	541.10	592.12	1.76790	.531	.638	1190
400.000	859.670	2.636	.37932	1.095	265.38	552.26	604.94	1.78299	.541	.645	1210
420.000	879.670	2.557	.39111	1.056	275.73	563.58	617.90	1.79790	.551	.652	1229
440.000	899.670	2.483	.40275	1.019	285.87	575.08	631.01	1.81264	.561	.659	1247
460.000	919.670	2.414	.41424	.985	295.81	586.74	644.27	1.82722	.571	.667	1265
480.000	939.670	2.350	.42561	.954	305.58	598.58	657.69	1.84165	.581	.675	1282
500.000	959.670	2.289	.43687	.925	315.19	610.60	671.27	1.85595	.591	.683	1299
520.000	979.670	2.232	.44802	.898	324.66	622.78	685.01	1.87011	.600	.691	1315
540.000	999.670	2.178	.45908	.873	334.00	635.15	698.90	1.88416	.610	.699	1331
560.000	1019.670	2.127	.47005	.849	343.23	647.69	712.97	1.89809	.620	.707	1347
580.000	1039.670	2.079	.48095	.827	352.34	660.40	727.19	1.91190	.629	.715	1362
600.000	1059.670	2.033	.49177	.806	361.35	673.28	741.58	1.92561	.638	.723	1377
640.000	1099.670	1.948	.51322	.768	379.10	699.56	770.84	1.95271	.656	.740	1406
680.000	1139.670	1.871	.53445	.733	396.53	726.53	800.75	1.97943	.674	.756	1435
720.000	1179.670	1.800	.55547	.702	413.68	754.16	831.30	2.00578	.692	.772	1462
760.000	1219.670	1.735	.57633	.673	430.58	782.45	862.49	2.03177	.708	.787	1489
800.000	1259.670	1.675	.59703	.647	447.28	811.38	894.30	2.05743	.725	.803	1514

Table 27. Continued.

ETHANE ISOBAR AT P = 800 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-295.445	164.225	40.758	.02453	249.834	6691.63	76.40	80.03	.61383	.369	.540	6734
-280.000	179.670	40.182	.02489	231.139	6188.97	84.70	88.39	.66245	.364	.542	6532
-260.000	199.670	39.434	.02536	208.498	5567.58	95.50	99.25	.71981	.359	.544	6256
-240.000	219.670	38.683	.02585	187.938	4991.54	106.33	110.16	.77186	.354	.546	5974
-220.000	239.670	37.927	.02637	169.443	4463.34	117.20	121.11	.81956	.350	.549	5692
-200.000	259.670	37.164	.02691	152.848	3980.67	128.13	132.11	.86365	.348	.552	5411
-180.000	279.670	36.390	.02748	137.943	3539.47	139.12	143.19	.90476	.346	.556	5134
-160.000	299.670	35.604	.02809	124.514	3135.36	150.21	154.37	.94338	.346	.562	4860
-140.000	319.670	34.800	.02874	112.363	2764.14	161.43	165.69	.97992	.346	.569	4589
-120.000	339.670	33.976	.02943	101.310	2422.05	172.80	177.16	1.01472	.347	.578	4322
-100.000	359.670	33.125	.03019	91.195	2105.93	184.35	188.83	1.04809	.349	.589	4056
-80.000	379.670	32.241	.03102	81.877	1813.13	196.13	200.73	1.08029	.352	.602	3791
-60.000	399.670	31.316	.03193	73.231	1541.56	208.18	212.91	1.11156	.355	.617	3525
-40.000	419.670	30.337	.03296	65.144	1289.51	220.55	225.43	1.14214	.358	.636	3257
-20.000	439.670	29.289	.03414	57.512	1055.73	233.33	238.39	1.17228	.363	.660	2983
-.000	459.670	28.148	.03553	50.231	839.25	246.62	251.88	1.20229	.368	.691	2702
20.000	479.670	26.879	.03720	43.195	639.36	261.67	266.18	1.23273	.379	.737	2401
40.000	499.670	25.418	.03934	36.268	455.53	275.67	281.50	1.26401	.386	.799	2090
60.000	519.670	23.630	.04232	29.237	287.30	292.18	298.45	1.29727	.395	.908	1748
80.000	539.670	21.126	.04733	21.584	134.14	311.82	318.84	1.33573	.409	1.187	1342
100.000	559.670	13.544	.07383	9.315	9.12	353.07	364.01	1.41750	.453	5.830	737
120.000	579.670	7.202	.13885	4.104	44.61	393.34	413.91	1.50718	.442	1.223	756
140.000	599.670	5.967	.16758	3.177	73.59	409.11	433.93	1.54118	.434	.862	822
160.000	619.670	5.279	.18942	2.687	96.72	421.74	449.80	1.56722	.435	.742	874
180.000	639.670	4.806	.20807	2.364	116.58	433.19	464.02	1.58980	.440	.685	917
200.000	659.670	4.448	.22481	2.129	134.30	444.08	477.39	1.61038	.446	.655	955
220.000	679.670	4.162	.24026	1.948	150.48	454.70	490.29	1.62965	.454	.637	989
240.000	699.670	3.925	.25478	1.802	165.51	465.19	502.93	1.64798	.463	.628	1019
260.000	719.670	3.723	.26859	1.681	179.62	475.64	515.43	1.66560	.472	.623	1048
280.000	739.670	3.548	.28184	1.579	192.99	486.13	527.88	1.68266	.481	.622	1074
300.000	759.670	3.394	.29462	1.492	205.75	496.69	540.33	1.69927	.491	.623	1099
320.000	779.670	3.257	.30704	1.416	217.99	507.34	552.83	1.71551	.501	.626	1123
340.000	799.670	3.134	.31913	1.348	229.80	518.12	565.39	1.73142	.511	.631	1145
360.000	819.670	3.022	.33095	1.288	241.23	529.03	578.05	1.74706	.521	.636	1167
380.000	839.670	2.919	.34253	1.234	252.33	540.08	590.83	1.76246	.531	.642	1187
400.000	859.670	2.826	.35392	1.186	263.13	551.29	603.72	1.77764	.542	.648	1207
420.000	879.670	2.739	.36512	1.141	273.69	562.66	616.75	1.79262	.552	.655	1227
440.000	899.670	2.658	.37616	1.101	284.01	574.20	629.92	1.80742	.562	.662	1245
460.000	919.670	2.584	.38706	1.064	294.13	585.90	643.24	1.82207	.572	.670	1263
480.000	939.670	2.514	.39784	1.029	304.06	597.78	656.71	1.83656	.581	.677	1281
500.000	959.670	2.448	.40849	.997	313.82	609.82	670.34	1.85090	.591	.685	1298
520.000	979.670	2.386	.41905	.968	323.44	622.04	684.12	1.86512	.601	.693	1314
540.000	999.670	2.328	.42951	.940	332.91	634.43	698.06	1.87920	.610	.701	1330
560.000	1019.670	2.273	.43989	.914	342.26	646.99	712.16	1.89317	.620	.709	1346
580.000	1039.670	2.221	.45018	.890	351.49	659.73	726.42	1.90702	.629	.717	1362
600.000	1059.670	2.172	.46041	.867	360.61	672.64	740.84	1.92076	.638	.725	1377
640.000	1099.670	2.080	.48066	.825	378.57	698.96	770.16	1.94792	.657	.741	1407
680.000	1139.670	1.997	.50069	.787	396.19	725.96	800.13	1.97468	.674	.757	1435
720.000	1179.670	1.921	.52052	.753	413.51	753.62	830.73	2.00107	.692	.773	1463
760.000	1219.670	1.851	.54018	.722	430.57	781.94	861.96	2.02711	.709	.789	1489
800.000	1259.670	1.787	.55969	.694	447.41	810.90	893.81	2.05280	.725	.804	1515

Table 27. Continued.

ETHANE ISOBAR AT P = 850 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-295.345	164.325	40.762	.02453	249.852	6698.72	76.41	80.28	.61394	.369	.539	6737
-280.000	179.670	40.190	.02488	231.294	6200.04	84.66	88.58	.66224	.364	.542	6536
-260.000	199.670	39.443	.02535	208.667	5579.25	95.45	99.44	.71958	.359	.544	6261
-240.000	219.670	38.693	.02584	188.116	5003.61	106.28	110.35	.77163	.354	.546	5980
-220.000	239.670	37.938	.02636	169.628	4475.67	117.14	121.29	.81931	.350	.548	5698
-200.000	259.670	37.176	.02690	153.040	3993.21	128.06	132.29	.86340	.348	.552	5418
-180.000	279.670	36.404	.02747	138.141	3552.20	139.05	143.37	.90449	.346	.556	5141
-160.000	299.670	35.620	.02807	124.719	3148.28	150.13	154.55	.94309	.346	.562	4868
-140.000	319.670	34.818	.02872	112.575	2777.26	161.33	165.85	.97961	.346	.569	4598
-120.000	339.670	33.997	.02941	101.529	2435.41	172.69	177.32	1.01439	.347	.578	4331
-100.000	359.670	33.149	.03017	91.424	2119.55	184.23	188.97	1.04773	.349	.588	4067
-80.000	379.670	32.269	.03099	82.118	1827.08	195.98	200.86	1.07989	.352	.601	3803
-60.000	399.670	31.348	.03190	73.488	1555.88	208.00	213.02	1.11111	.355	.616	3538
-40.000	419.670	30.375	.03292	65.420	1304.29	220.35	225.53	1.14163	.358	.635	3271
-20.000	439.670	29.336	.03409	57.814	1071.06	233.08	238.45	1.17170	.363	.658	3000
-.000	459.670	28.207	.03545	50.570	855.25	246.31	251.89	1.20159	.368	.688	2721
20.000	479.670	26.956	.03710	43.586	656.21	260.27	266.11	1.23187	.379	.733	2425
40.000	499.670	25.525	.03918	36.739	473.52	275.13	281.30	1.26289	.386	.791	2120
60.000	519.670	23.798	.04202	29.850	306.96	291.38	297.99	1.29563	.395	.888	1788
80.000	539.670	21.470	.04658	22.535	156.69	310.27	317.60	1.33263	.408	1.111	1405
100.000	559.670	16.771	.05963	13.080	28.46	339.14	348.52	1.38875	.435	2.651	896
120.000	579.670	8.494	.11772	5.057	33.59	386.25	404.78	1.48938	.452	1.585	738
140.000	599.670	6.694	.14940	3.675	64.40	404.99	428.51	1.52968	.439	.959	807
160.000	619.670	5.818	.17187	3.036	88.95	418.67	445.73	1.55794	.438	.790	861
180.000	639.670	5.248	.19055	2.638	109.85	430.69	460.68	1.58170	.442	.715	906
200.000	659.670	4.829	.20708	2.356	128.37	441.94	474.54	1.60303	.448	.675	946
220.000	679.670	4.500	.22220	2.143	145.21	452.81	487.79	1.62282	.456	.652	981
240.000	699.670	4.231	.23633	1.974	160.78	463.49	500.69	1.64154	.464	.640	1013
260.000	719.670	4.005	.24970	1.836	175.36	474.11	513.41	1.65946	.473	.633	1042
280.000	739.670	3.810	.26248	1.719	189.14	484.72	526.03	1.67676	.483	.630	1069
300.000	759.670	3.639	.27478	1.620	202.25	495.38	538.63	1.69356	.492	.630	1095
320.000	779.670	3.488	.28670	1.534	214.82	506.12	551.25	1.70996	.502	.632	1119
340.000	799.670	3.353	.29828	1.459	226.91	516.97	563.92	1.72601	.512	.636	1142
360.000	819.670	3.230	.30959	1.392	238.60	527.95	576.68	1.74177	.522	.640	1164
380.000	839.670	3.119	.32066	1.332	249.93	539.06	589.53	1.75726	.532	.646	1185
400.000	859.670	3.016	.33153	1.278	260.96	550.33	602.51	1.77253	.542	.652	1205
420.000	879.670	2.922	.34221	1.229	271.71	561.74	615.61	1.78760	.552	.658	1225
440.000	899.670	2.835	.35273	1.185	282.22	573.32	628.84	1.80247	.562	.665	1243
460.000	919.670	2.754	.36310	1.144	292.51	585.06	642.21	1.81717	.572	.672	1262
480.000	939.670	2.678	.37335	1.106	302.60	596.97	655.74	1.83172	.582	.680	1279
500.000	959.670	2.608	.38348	1.071	312.52	609.05	669.41	1.84612	.592	.687	1297
520.000	979.670	2.541	.39351	1.038	322.27	621.30	683.23	1.86038	.601	.695	1313
540.000	999.670	2.479	.40345	1.008	331.88	633.71	697.22	1.87450	.611	.703	1330
560.000	1019.670	2.420	.41329	.980	341.35	646.30	711.35	1.88851	.620	.711	1346
580.000	1039.670	2.364	.42306	.953	350.70	659.06	725.65	1.90239	.630	.719	1362
600.000	1059.670	2.311	.43276	.928	359.93	671.99	740.11	1.91616	.639	.727	1377
640.000	1099.670	2.213	.45195	.883	378.10	698.36	769.49	1.94338	.657	.743	1407
680.000	1139.670	2.123	.47092	.842	395.90	725.39	799.51	1.97020	.675	.758	1435
720.000	1179.670	2.042	.48969	.805	413.39	753.09	830.16	1.99663	.692	.774	1463
760.000	1219.670	1.967	.50829	.772	430.60	781.43	861.44	2.02270	.709	.790	1490
800.000	1259.670	1.898	.52674	.741	447.58	810.42	893.32	2.04842	.725	.805	1516

Table 27. Continued.

ETHANE ISOBAR AT P = 900 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-295.246	164.424	40.766	.02453	249.871	6705.80	76.43	80.52	.61406	.369	.539	6740
-280.000	179.670	40.198	.02488	231.449	6211.11	84.62	88.77	.66203	.365	.542	6541
-260.000	199.670	39.452	.02535	208.834	5590.92	95.41	99.63	.71936	.359	.544	6267
-240.000	219.670	38.703	.02584	188.293	5015.66	106.23	110.54	.77140	.354	.546	5986
-220.000	239.670	37.949	.02635	169.813	4487.99	117.09	121.48	.81907	.350	.548	5704
-200.000	259.670	37.189	.02689	153.231	4005.74	128.00	132.48	.86314	.348	.552	5425
-180.000	279.670	36.418	.02746	138.339	3564.92	138.97	143.55	.90422	.346	.556	5149
-160.000	299.670	35.635	.02806	124.923	3161.18	150.04	154.72	.94280	.346	.562	4876
-140.000	319.670	34.836	.02871	112.786	2790.36	161.24	166.02	.97930	.346	.569	4607
-120.000	339.670	34.017	.02940	101.748	2448.74	172.58	177.48	1.01406	.347	.577	4341
-100.000	359.670	33.172	.03015	91.652	2133.15	184.10	189.12	1.04737	.349	.588	4077
-80.000	379.670	32.296	.03096	82.358	1840.99	195.84	201.00	1.07949	.352	.600	3814
-60.000	399.670	31.380	.03187	73.743	1570.16	207.83	213.14	1.11067	.355	.615	3551
-40.000	419.670	30.413	.03288	65.695	1319.01	220.14	225.62	1.14113	.358	.633	3285
-20.000	439.670	29.382	.03403	58.114	1086.30	232.84	238.51	1.17112	.363	.656	3016
-.000	459.670	28.265	.03538	50.905	871.14	246.01	251.90	1.20091	.368	.685	2740
20.000	479.670	27.032	.03699	43.970	672.90	259.89	266.05	1.23104	.379	.728	2447
40.000	499.670	25.629	.03902	37.197	491.26	274.62	281.12	1.26181	.386	.783	2148
60.000	519.670	23.956	.04174	30.434	326.17	290.62	297.58	1.29409	.395	.871	1825
80.000	539.670	21.769	.04594	23.390	178.18	308.90	316.56	1.32991	.407	1.055	1462
100.000	559.670	18.046	.05541	15.123	52.23	333.68	342.92	1.37779	.428	1.821	1015
120.000	579.670	10.207	.09797	6.384	26.06	377.42	393.74	1.46863	.462	2.073	736
140.000	599.670	7.527	.13285	4.267	55.89	400.40	422.54	1.51755	.444	1.083	794
160.000	619.670	6.406	.15611	3.429	81.52	415.39	441.41	1.54853	.442	.845	849
180.000	639.670	5.717	.17491	2.937	103.35	428.07	457.22	1.57364	.445	.747	896
200.000	659.670	5.228	.19129	2.600	122.63	439.73	471.61	1.59580	.450	.697	937
220.000	679.670	4.851	.20615	2.351	140.10	450.88	485.23	1.61615	.457	.668	973
240.000	699.670	4.547	.21993	2.155	156.19	461.77	498.42	1.63528	.466	.652	1006
260.000	719.670	4.293	.23291	1.997	171.22	472.54	511.36	1.65351	.474	.643	1036
280.000	739.670	4.077	.24528	1.865	185.39	483.28	524.16	1.67106	.484	.638	1064
300.000	759.670	3.889	.25716	1.754	198.86	494.05	536.91	1.68806	.493	.637	1090
320.000	779.670	3.722	.26864	1.658	211.74	504.89	549.66	1.70463	.503	.638	1115
340.000	799.670	3.574	.27978	1.573	224.11	515.82	562.45	1.72082	.513	.641	1139
360.000	819.670	3.441	.29064	1.499	236.05	526.86	575.30	1.73670	.523	.645	1161
380.000	839.670	3.320	.30125	1.433	247.62	538.04	588.24	1.75230	.533	.650	1182
400.000	859.670	3.209	.31165	1.373	258.86	549.35	601.29	1.76766	.543	.655	1203
420.000	879.670	3.107	.32187	1.319	269.81	560.82	614.46	1.78280	.553	.662	1223
440.000	899.670	3.013	.33192	1.270	280.50	572.44	627.76	1.79775	.563	.668	1242
460.000	919.670	2.925	.34183	1.225	290.96	584.22	641.19	1.81251	.572	.675	1260
480.000	939.670	2.844	.35161	1.184	301.21	596.16	654.76	1.82711	.582	.682	1278
500.000	959.670	2.768	.36127	1.146	311.27	608.28	668.48	1.84156	.592	.690	1296
520.000	979.670	2.697	.37083	1.110	321.16	620.55	682.35	1.85587	.602	.697	1313
540.000	999.670	2.630	.38030	1.078	330.90	633.00	696.38	1.87004	.611	.705	1329
560.000	1019.670	2.566	.38967	1.047	340.50	645.61	710.55	1.88408	.620	.713	1346
580.000	1039.670	2.506	.39897	1.018	349.96	658.40	724.89	1.89800	.630	.721	1361
600.000	1059.670	2.450	.40820	.991	359.30	671.35	739.37	1.91180	.639	.728	1377
640.000	1099.670	2.345	.42645	.942	377.67	697.75	768.82	1.93908	.657	.744	1407
680.000	1139.670	2.250	.44448	.897	395.65	724.82	798.90	1.96594	.675	.760	1436
720.000	1179.670	2.163	.46231	.858	413.31	752.55	829.60	1.99241	.692	.775	1464
760.000	1219.670	2.083	.47997	.822	430.68	780.92	860.91	2.01852	.709	.791	1491
800.000	1259.670	2.010	.49748	.789	447.79	809.94	892.84	2.04428	.726	.806	1517

Table 27. Continued.

ETHANE ISOBAR AT P = 1000 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-295.048	164.622	40.773	.02453	249.908	6719.96	76.47	81.02	.61430	.369	.539	6746
-280.000	179.670	40.214	.02487	231.758	6233.19	84.55	89.15	.66160	.365	.542	6551
-260.000	199.670	39.470	.02534	209.170	5614.22	95.32	100.01	.71892	.359	.544	6277
-240.000	219.670	38.723	.02582	188.648	5039.73	106.13	110.91	.77093	.354	.546	5998
-220.000	239.670	37.972	.02634	170.182	4512.59	116.97	121.85	.81858	.351	.548	5717
-200.000	259.670	37.214	.02687	153.614	4030.76	127.87	132.84	.86263	.348	.551	5439
-180.000	279.670	36.446	.02744	138.733	3590.30	138.83	143.91	.90368	.346	.555	5164
-160.000	299.670	35.667	.02804	125.329	3186.94	149.88	155.07	.94223	.346	.561	4892
-140.000	319.670	34.872	.02868	113.205	2816.51	161.05	166.36	.97868	.346	.568	4625
-120.000	339.670	34.058	.02936	102.184	2475.33	172.36	177.80	1.01339	.348	.576	4360
-100.000	359.670	33.219	.03010	92.106	2160.26	183.85	189.42	1.04665	.349	.587	4098
-80.000	379.670	32.350	.03091	82.835	1868.70	195.55	201.27	1.07870	.352	.599	3837
-60.000	399.670	31.443	.03180	74.248	1598.58	207.49	213.38	1.10979	.355	.613	3576
-40.000	419.670	30.488	.03280	66.238	1348.27	219.74	225.81	1.14014	.359	.631	3314
-20.000	439.670	29.473	.03393	58.705	1116.56	232.36	238.64	1.16999	.363	.652	3048
-.000	459.670	28.378	.03524	51.561	902.59	245.42	251.94	1.19958	.368	.679	2778
20.000	479.670	27.177	.03680	44.716	705.83	259.14	265.96	1.22942	.379	.720	2492
40.000	499.670	25.826	.03872	38.077	526.04	273.64	280.81	1.25974	.386	.768	2202
60.000	519.670	24.247	.04124	31.530	363.40	289.22	296.86	1.29122	.395	.843	1895
80.000	539.670	22.274	.04489	24.897	218.83	306.58	314.89	1.32526	.406	.976	1561
100.000	559.670	19.427	.05148	17.801	96.33	327.68	337.21	1.36584	.421	1.325	1184
120.000	579.670	13.986	.07150	9.825	30.50	360.01	373.25	1.42899	.442	2.179	834
140.000	599.670	9.578	.10441	5.813	43.66	389.70	409.04	1.49140	.454	1.391	787
160.000	619.670	7.747	.12909	4.371	68.53	408.15	432.06	1.52919	.449	.982	833
180.000	639.670	6.747	.14822	3.623	91.45	422.45	449.90	1.55754	.450	.824	880
200.000	659.670	6.082	.16443	3.145	111.93	435.07	465.52	1.58159	.454	.746	922
220.000	679.670	5.591	.17886	2.806	130.47	446.86	479.98	1.60319	.461	.704	960
240.000	699.670	5.206	.19209	2.548	147.52	458.21	493.78	1.62321	.468	.679	995
260.000	719.670	4.891	.20444	2.343	163.38	469.34	507.20	1.64211	.477	.664	1026
280.000	739.670	4.627	.21612	2.176	178.30	480.36	520.38	1.66019	.486	.656	1055
300.000	759.670	4.400	.22728	2.036	192.43	491.36	533.45	1.67762	.495	.652	1083
320.000	779.670	4.201	.23801	1.917	205.90	502.39	546.46	1.69453	.505	.650	1108
340.000	799.670	4.026	.24839	1.813	218.81	513.48	559.48	1.71101	.514	.652	1133
360.000	819.670	3.869	.25848	1.722	231.24	524.67	572.53	1.72714	.524	.654	1156
380.000	839.670	3.727	.26831	1.642	243.26	535.97	585.65	1.74295	.534	.658	1178
400.000	859.670	3.598	.27793	1.570	254.91	547.40	598.86	1.75849	.544	.663	1199
420.000	879.670	3.480	.28736	1.506	266.24	558.96	612.17	1.77380	.554	.668	1220
440.000	899.670	3.371	.29662	1.447	277.28	570.67	625.59	1.78889	.564	.674	1239
460.000	919.670	3.271	.30573	1.394	288.07	582.53	639.14	1.80378	.573	.681	1258
480.000	939.670	3.178	.31471	1.345	298.62	594.55	652.82	1.81850	.583	.687	1277
500.000	959.670	3.090	.32358	1.300	308.97	606.72	666.64	1.83305	.593	.694	1295
520.000	979.670	3.009	.33233	1.258	319.14	619.06	680.60	1.84745	.602	.702	1312
540.000	999.670	2.933	.34100	1.220	329.13	631.56	694.71	1.86170	.612	.709	1329
560.000	1019.670	2.861	.34957	1.184	338.96	644.23	708.96	1.87582	.621	.716	1345
580.000	1039.670	2.793	.35807	1.150	348.65	657.06	723.37	1.88981	.630	.724	1362
600.000	1059.670	2.729	.36649	1.119	358.21	670.06	737.92	1.90368	.640	.732	1377
640.000	1099.670	2.610	.38314	1.061	376.96	696.55	767.49	1.93107	.658	.747	1408
680.000	1139.670	2.503	.39957	1.010	395.30	723.69	797.68	1.95803	.675	.762	1437
720.000	1179.670	2.405	.41580	.964	413.28	751.48	828.47	1.98459	.693	.778	1466
760.000	1219.670	2.316	.43185	.923	430.95	779.91	859.88	2.01077	.709	.793	1493
800.000	1259.670	2.233	.44776	.886	448.33	808.98	891.89	2.03659	.726	.808	1520

Table 27. Continued.

ETHANE ISOBAR AT P = 1100 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-294.850	164.820	40.781	.02452	249.946	6734.11	76.51	81.51	.61453	.369	.539	6752
-280.000	179.670	40.230	.02486	232.066	6255.23	84.47	89.54	.66118	.365	.542	6560
-260.000	199.670	39.487	.02532	209.504	5637.47	95.24	100.40	.71848	.359	.544	6288
-240.000	219.670	38.743	.02581	189.001	5063.75	106.03	111.29	.77047	.354	.546	6009
-220.000	239.670	37.994	.02632	170.551	4537.15	116.86	122.22	.81810	.351	.548	5730
-200.000	259.670	37.238	.02685	153.994	4055.73	127.74	133.21	.86212	.348	.551	5452
-180.000	279.670	36.474	.02742	139.125	3615.64	138.68	144.26	.90314	.347	.555	5178
-160.000	299.670	35.698	.02801	125.734	3212.63	149.71	155.42	.94166	.346	.560	4908
-140.000	319.670	34.907	.02865	113.623	2842.58	160.86	166.69	.97807	.347	.567	4642
-120.000	339.670	34.098	.02933	102.616	2501.83	172.14	178.12	1.01274	.348	.575	4379
-100.000	359.670	33.265	.03006	92.557	2187.25	183.60	189.72	1.04594	.350	.585	4118
-80.000	379.670	32.403	.03086	83.308	1896.27	195.26	201.55	1.07792	.352	.597	3859
-60.000	399.670	31.505	.03174	74.748	1626.83	207.16	213.63	1.10893	.355	.611	3601
-40.000	419.670	30.562	.03272	66.772	1377.30	219.35	226.01	1.13918	.359	.628	3342
-20.000	439.670	29.561	.03383	59.285	1146.52	231.89	238.78	1.16888	.363	.649	3080
-.000	459.670	28.487	.03510	52.201	933.64	244.85	252.00	1.19828	.368	.674	2814
20.000	479.670	27.315	.03661	45.438	738.19	258.43	265.89	1.22786	.379	.712	2534
40.000	499.670	26.010	.03845	38.916	559.99	272.71	280.54	1.25778	.386	.756	2253
60.000	519.670	24.509	.04080	32.546	399.33	287.94	296.25	1.28860	.395	.820	1960
80.000	539.670	22.695	.04406	26.216	257.19	304.61	313.59	1.32132	.405	.924	1648
100.000	559.670	20.292	.04928	19.748	136.79	323.85	333.88	1.35822	.419	1.136	1311
120.000	579.670	16.516	.06055	12.936	53.50	348.93	361.26	1.40624	.436	1.667	973
140.000	599.670	11.934	.08379	7.810	43.48	378.33	395.40	1.46577	.460	1.553	825
160.000	619.670	9.315	.10735	5.554	60.21	400.11	421.97	1.50940	.455	1.132	833
180.000	639.670	7.905	.12651	4.442	81.96	416.36	442.13	1.54144	.455	.911	872
200.000	659.670	7.015	.14255	3.774	102.76	430.12	459.15	1.56764	.458	.802	912
220.000	679.670	6.384	.15664	3.319	121.96	442.65	474.55	1.59064	.464	.743	951
240.000	699.670	5.903	.16941	2.983	139.72	454.52	489.03	1.61164	.471	.708	986
260.000	719.670	5.518	.18124	2.722	156.27	466.04	502.96	1.63127	.479	.687	1018
280.000	739.670	5.199	.19236	2.513	171.82	477.37	516.55	1.64991	.488	.674	1048
300.000	759.670	4.928	.20293	2.339	186.53	488.62	529.95	1.66778	.497	.667	1076
320.000	779.670	4.694	.21305	2.193	200.54	499.85	543.25	1.68506	.506	.663	1103
340.000	799.670	4.488	.22281	2.068	213.94	511.12	556.51	1.70184	.516	.663	1128
360.000	819.670	4.305	.23226	1.959	226.83	522.46	569.77	1.71822	.525	.664	1152
380.000	839.670	4.142	.24146	1.863	239.26	533.89	583.07	1.73426	.535	.667	1175
400.000	859.670	3.993	.25043	1.777	251.30	545.43	596.43	1.74999	.545	.670	1196
420.000	879.670	3.858	.25920	1.701	262.99	557.09	609.89	1.76546	.555	.675	1217
440.000	899.670	3.734	.26781	1.632	274.37	568.89	623.44	1.78070	.564	.680	1237
460.000	919.670	3.620	.27627	1.569	285.47	580.83	637.11	1.79572	.574	.686	1257
480.000	939.670	3.514	.28460	1.512	296.32	592.92	650.90	1.81055	.584	.693	1276
500.000	959.670	3.415	.29281	1.459	306.94	605.17	664.81	1.82521	.593	.699	1294
520.000	979.670	3.323	.30091	1.411	317.36	617.57	678.86	1.83970	.603	.706	1312
540.000	999.670	3.237	.30892	1.366	327.59	630.13	693.05	1.85404	.612	.713	1329
560.000	1019.670	3.156	.31683	1.325	337.65	642.85	707.39	1.86823	.622	.720	1346
580.000	1039.670	3.080	.32467	1.286	347.56	655.73	721.86	1.88229	.631	.728	1362
600.000	1059.670	3.008	.33244	1.250	357.32	668.77	736.49	1.89622	.640	.735	1378
640.000	1099.670	2.875	.34777	1.184	376.46	695.34	766.18	1.92373	.658	.750	1409
680.000	1139.670	2.756	.36288	1.126	395.14	722.56	796.47	1.95079	.676	.765	1439
720.000	1179.670	2.647	.37779	1.074	413.43	750.42	827.37	1.97743	.693	.780	1468
760.000	1219.670	2.548	.39254	1.027	431.38	778.91	858.86	2.00368	.710	.795	1495
800.000	1259.670	2.456	.40713	.984	449.03	808.02	890.95	2.02957	.726	.810	1522

Table 27. Continued.

ETHANE ISOBAR AT P = 1200 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-294.652	165.018	40.788	.02452	249.985	6748.26	76.55	82.00	.61477	.369	.539	6758
-280.000	179.670	40.246	.02485	232.373	6277.21	84.40	89.92	.66075	.365	.542	6569
-260.000	199.670	39.505	.02531	209.837	5660.68	95.15	100.78	.71804	.359	.544	6298
-240.000	219.670	38.762	.02580	189.353	5087.73	105.93	111.67	.77001	.355	.545	6021
-220.000	239.670	38.016	.02630	170.917	4561.67	116.75	122.59	.81762	.351	.548	5742
-200.000	259.670	37.263	.02684	154.374	4080.65	127.61	133.57	.86161	.348	.551	5466
-180.000	279.670	36.502	.02740	139.517	3640.95	138.53	144.62	.90261	.347	.555	5193
-160.000	299.670	35.729	.02799	126.136	3238.25	149.55	155.77	.94109	.346	.560	4924
-140.000	319.670	34.942	.02862	114.038	2868.57	160.67	167.03	.97747	.347	.567	4659
-120.000	339.670	34.138	.02929	103.046	2528.24	171.93	178.44	1.01209	.348	.575	4398
-100.000	359.670	33.311	.03002	93.004	2214.14	183.35	190.03	1.04523	.350	.584	4139
-80.000	379.670	32.456	.03081	83.776	1923.71	194.98	201.82	1.07715	.352	.596	3882
-60.000	399.670	31.566	.03168	75.242	1654.90	206.83	213.87	1.10808	.355	.609	3626
-40.000	419.670	30.634	.03264	67.300	1406.11	218.97	226.22	1.13822	.359	.626	3369
-20.000	439.670	29.647	.03373	59.855	1176.19	231.43	238.93	1.16780	.363	.645	3111
-.000	459.670	28.592	.03497	52.826	964.32	244.30	252.07	1.19703	.368	.670	2849
20.000	479.670	27.448	.03643	46.137	770.04	257.75	265.85	1.22636	.379	.705	2575
40.000	499.670	26.183	.03819	39.718	593.22	271.84	280.33	1.25593	.386	.745	2302
60.000	519.670	24.749	.04041	33.498	434.16	286.77	295.75	1.28618	.395	.801	2020
80.000	539.670	23.058	.04337	27.402	293.83	302.90	312.54	1.31787	.405	.885	1725
100.000	559.670	20.936	.04776	21.342	174.79	320.94	331.56	1.35246	.417	1.033	1416
120.000	579.670	17.987	.05560	15.259	85.59	342.53	354.88	1.39338	.432	1.334	1106
140.000	599.670	14.045	.07120	9.929	52.50	368.72	384.55	1.44529	.459	1.516	895
160.000	619.670	11.008	.09084	6.953	59.26	391.86	412.05	1.49043	.459	1.231	858
180.000	639.670	9.175	.10899	5.402	76.28	409.94	434.16	1.52557	.459	.997	876
200.000	659.670	8.025	.12462	4.493	95.88	424.92	452.61	1.55398	.462	.861	910
220.000	679.670	7.229	.13832	3.894	115.01	438.26	469.00	1.57846	.467	.785	946
240.000	699.670	6.637	.15068	3.463	133.08	450.71	484.19	1.60050	.474	.739	980
260.000	719.670	6.171	.16205	3.136	150.07	462.66	498.67	1.62090	.481	.711	1013
280.000	739.670	5.791	.17269	2.876	166.10	474.32	512.69	1.64012	.490	.693	1043
300.000	759.670	5.472	.18276	2.665	181.28	485.83	526.44	1.65846	.499	.683	1072
320.000	779.670	5.199	.19236	2.488	195.74	497.28	540.02	1.67611	.508	.677	1099
340.000	799.670	4.960	.20159	2.338	209.58	508.73	553.53	1.69321	.517	.674	1125
360.000	819.670	4.750	.21051	2.208	222.87	520.22	567.00	1.70985	.527	.674	1149
380.000	839.670	4.563	.21917	2.094	235.68	531.78	580.49	1.72611	.536	.675	1172
400.000	859.670	4.394	.22760	1.994	248.07	543.44	594.02	1.74204	.546	.678	1194
420.000	879.670	4.240	.23583	1.904	260.09	555.21	607.62	1.75767	.556	.682	1216
440.000	899.670	4.100	.24389	1.824	271.78	567.11	621.30	1.77306	.565	.687	1236
460.000	919.670	3.971	.25180	1.751	283.17	579.13	635.09	1.78821	.575	.692	1256
480.000	939.670	3.852	.25958	1.685	294.30	591.30	648.98	1.80316	.585	.698	1275
500.000	959.670	3.742	.26724	1.625	305.18	603.61	663.00	1.81792	.594	.704	1294
520.000	979.670	3.639	.27479	1.569	315.84	616.08	677.14	1.83250	.604	.710	1312
540.000	999.670	3.543	.28225	1.518	326.30	628.70	691.41	1.84693	.613	.717	1329
560.000	1019.670	3.453	.28961	1.470	336.58	641.47	705.82	1.86120	.622	.724	1346
580.000	1039.670	3.368	.29690	1.426	346.70	654.40	720.37	1.87533	.632	.731	1363
600.000	1059.670	3.288	.30412	1.385	356.66	667.49	735.07	1.88933	.641	.738	1379
640.000	1099.670	3.141	.31835	1.310	376.16	694.14	764.88	1.91695	.659	.753	1411
680.000	1139.670	3.009	.33236	1.244	395.17	721.43	795.28	1.94410	.676	.767	1441
720.000	1179.670	2.889	.34617	1.185	413.76	749.35	826.28	1.97083	.693	.782	1470
760.000	1219.670	2.779	.35982	1.132	431.98	777.90	857.86	1.99715	.710	.797	1498
800.000	1259.670	2.679	.37331	1.084	449.88	807.07	890.02	2.02310	.727	.812	1525

Table 27. Continued.

ETHANE ISOBAR AT P = 1300 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-294.454	165.216	40.796	.02451	250.024	6762.41	76.59	82.49	.61500	.369	.539	6763
-280.000	179.670	40.262	.02484	232.680	6299.14	84.33	90.31	.66033	.365	.542	6578
-260.000	199.670	39.523	.02530	210.170	5683.84	95.07	101.16	.71760	.360	.544	6309
-240.000	219.670	38.782	.02579	189.704	5111.67	105.84	112.04	.76955	.355	.545	6032
-220.000	239.670	38.038	.02629	171.283	4586.14	116.64	122.97	.81714	.351	.547	5755
-200.000	259.670	37.287	.02682	154.752	4105.53	127.48	133.94	.86111	.348	.550	5480
-180.000	279.670	36.529	.02738	139.906	3666.17	138.39	144.98	.90207	.347	.554	5208
-160.000	299.670	35.760	.02796	126.537	3263.81	149.38	156.11	.94053	.347	.559	4940
-140.000	319.670	34.977	.02859	114.451	2894.49	160.48	167.37	.97687	.347	.566	4676
-120.000	339.670	34.177	.02926	103.473	2554.56	171.72	178.76	1.01144	.348	.574	4416
-100.000	359.670	33.355	.02998	93.447	2240.91	183.11	190.33	1.04453	.350	.583	4159
-80.000	379.670	32.507	.03076	84.239	1951.01	194.70	202.11	1.07639	.353	.595	3904
-60.000	399.670	31.626	.03162	75.731	1682.81	206.51	214.12	1.10724	.356	.608	3650
-40.000	419.670	30.704	.03257	67.820	1434.73	218.59	226.43	1.13729	.359	.624	3396
-20.000	439.670	29.731	.03363	60.415	1205.60	230.99	239.08	1.16674	.364	.642	3141
-.000	459.670	28.694	.03485	53.437	994.65	243.76	252.15	1.19580	.369	.665	2884
20.000	479.670	27.575	.03626	46.816	801.42	257.10	265.83	1.22491	.379	.699	2615
40.000	499.670	26.347	.03795	40.488	625.80	271.01	280.15	1.25416	.386	.735	2349
60.000	519.670	24.971	.04005	34.396	468.08	285.68	295.32	1.28393	.394	.785	2076
80.000	539.670	23.380	.04277	28.488	329.13	301.37	311.67	1.31479	.404	.855	1795
100.000	559.670	21.456	.04661	22.720	210.99	318.57	329.79	1.34774	.416	.966	1507
120.000	579.670	18.973	.05271	17.092	119.11	338.19	350.88	1.38475	.429	1.160	1221
140.000	599.670	15.720	.06361	11.951	69.04	361.32	376.63	1.43002	.457	1.387	985
160.000	619.670	12.626	.07920	8.456	65.31	384.33	403.39	1.47393	.460	1.248	905
180.000	639.670	10.500	.09524	6.482	75.65	403.49	426.42	1.51052	.462	1.059	896
200.000	659.670	9.092	.10999	5.301	92.11	419.59	446.06	1.54077	.465	.916	916
220.000	679.670	8.119	.12316	4.532	110.14	433.76	463.41	1.56668	.470	.826	947
240.000	699.670	7.404	.13507	3.990	127.94	446.81	479.32	1.58976	.476	.770	979
260.000	719.670	6.849	.14600	3.584	145.03	459.20	494.35	1.61094	.483	.735	1010
280.000	739.670	6.402	.15620	3.268	161.30	471.21	508.81	1.63076	.492	.713	1041
300.000	759.670	6.031	.16582	3.013	176.80	483.00	522.92	1.64958	.500	.699	1069
320.000	779.670	5.715	.17498	2.801	191.61	494.68	536.80	1.66762	.509	.690	1096
340.000	799.670	5.442	.18375	2.623	205.79	506.32	550.55	1.68504	.518	.686	1122
360.000	819.670	5.203	.19221	2.470	219.41	517.97	564.24	1.70194	.528	.684	1147
380.000	839.670	4.990	.20040	2.337	232.55	529.67	577.91	1.71843	.537	.684	1171
400.000	859.670	4.799	.20837	2.220	245.26	541.45	591.61	1.73455	.547	.686	1193
420.000	879.670	4.627	.21613	2.117	257.58	553.33	605.36	1.75036	.557	.689	1215
440.000	899.670	4.470	.22373	2.024	269.55	565.32	619.17	1.76589	.566	.693	1236
460.000	919.670	4.326	.23117	1.940	281.20	577.43	633.08	1.78117	.576	.698	1256
480.000	939.670	4.193	.23848	1.864	292.58	589.67	647.08	1.79624	.585	.703	1275
500.000	959.670	4.070	.24567	1.795	303.70	602.06	661.20	1.81110	.595	.709	1294
520.000	979.670	3.956	.25276	1.732	314.60	614.59	675.43	1.82578	.604	.715	1313
540.000	999.670	3.850	.25974	1.673	325.27	627.26	689.79	1.84029	.614	.721	1330
560.000	1019.670	3.750	.26664	1.619	335.76	640.09	704.28	1.85464	.623	.728	1348
580.000	1039.670	3.657	.27346	1.569	346.07	653.07	718.90	1.86884	.632	.735	1364
600.000	1059.670	3.569	.28021	1.523	356.21	666.21	733.66	1.88290	.641	.741	1381
640.000	1099.670	3.407	.29351	1.438	376.06	692.95	763.60	1.91063	.659	.756	1413
680.000	1139.670	3.262	.30658	1.364	395.39	720.31	794.11	1.93789	.677	.770	1443
720.000	1179.670	3.130	.31946	1.298	414.26	748.30	825.20	1.96470	.694	.784	1473
760.000	1219.670	3.010	.33217	1.239	432.75	776.90	856.87	1.99109	.711	.799	1501
800.000	1259.670	2.901	.34474	1.186	450.89	806.12	889.11	2.01711	.727	.813	1528

Table 27. Continued.

ETHANE ISOBAR AT P = 1400 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-294.257	165.413	40.803	.02451	250.064	6776.54	76.63	82.99	.61523	.369	.539	6769
-280.000	179.670	40.278	.02483	232.987	6321.02	84.25	90.69	.65991	.365	.541	6588
-260.000	199.670	39.540	.02529	210.502	5706.95	94.98	101.54	.71716	.360	.543	6319
-240.000	219.670	38.802	.02577	190.055	5135.57	105.74	112.42	.76910	.355	.545	6044
-220.000	239.670	38.059	.02627	171.648	4610.56	116.53	123.34	.81666	.351	.547	5768
-200.000	259.670	37.312	.02680	155.128	4130.35	127.36	134.31	.86061	.349	.550	5493
-180.000	279.670	36.556	.02736	140.294	3691.34	138.25	145.34	.90155	.347	.554	5223
-160.000	299.670	35.790	.02794	126.936	3289.31	149.22	156.46	.93997	.347	.559	4956
-140.000	319.670	35.012	.02856	114.862	2920.34	160.30	167.70	.97627	.347	.565	4693
-120.000	339.670	34.216	.02923	103.897	2580.79	171.51	179.09	1.01080	.348	.573	4435
-100.000	359.670	33.400	.02994	93.887	2267.59	182.88	190.64	1.04384	.350	.582	4179
-80.000	379.670	32.558	.03071	84.699	1978.18	194.43	202.39	1.07564	.353	.593	3926
-60.000	399.670	31.685	.03156	76.215	1710.56	206.20	214.38	1.10641	.356	.606	3674
-40.000	419.670	30.773	.03250	68.333	1463.14	218.22	226.65	1.13636	.359	.621	3423
-20.000	439.670	29.813	.03354	60.965	1234.75	230.55	239.25	1.16570	.364	.639	3171
-.000	459.670	28.794	.03473	54.036	1024.65	243.25	252.25	1.19461	.369	.661	2917
20.000	479.670	27.698	.03610	47.477	832.36	256.46	265.82	1.22351	.379	.693	2653
40.000	499.670	26.503	.03773	41.231	657.79	270.23	280.01	1.25247	.386	.727	2394
60.000	519.670	25.177	.03972	35.250	501.19	284.66	294.96	1.28181	.394	.771	2130
80.000	539.670	23.669	.04225	29.496	363.32	299.99	310.94	1.31199	.404	.831	1861
100.000	559.670	21.894	.04567	23.949	245.80	316.55	328.39	1.34371	.415	.919	1588
120.000	579.670	19.713	.05073	18.632	152.34	334.89	348.05	1.37821	.427	1.057	1321
140.000	599.670	16.975	.05891	13.743	92.18	355.80	371.07	1.41887	.455	1.244	1081
160.000	619.670	14.060	.07112	9.972	74.96	377.84	396.28	1.46022	.460	1.230	963
180.000	639.670	11.790	.08482	7.637	80.11	397.41	419.40	1.49696	.463	1.084	931
200.000	659.670	10.182	.09821	6.184	92.06	414.30	439.76	1.52830	.467	.957	934
220.000	679.670	9.039	.11063	5.229	107.82	429.21	457.90	1.55539	.472	.863	955
240.000	699.670	8.197	.12200	4.562	124.64	442.85	474.48	1.57945	.478	.800	982
260.000	719.670	7.548	.13248	4.068	141.37	455.70	490.05	1.60139	.485	.759	1012
280.000	739.670	7.029	.14226	3.687	157.60	468.06	504.94	1.62181	.493	.732	1041
300.000	759.670	6.602	.15146	3.383	173.22	480.14	519.40	1.64110	.502	.715	1069
320.000	779.670	6.242	.16021	3.133	188.22	492.05	533.58	1.65952	.511	.704	1096
340.000	799.670	5.932	.16858	2.924	202.64	503.89	547.59	1.67726	.520	.697	1122
360.000	819.670	5.662	.17663	2.746	216.53	515.70	561.49	1.69443	.529	.694	1147
380.000	839.670	5.422	.18442	2.591	229.93	527.55	575.36	1.71115	.538	.693	1170
400.000	859.670	5.209	.19198	2.457	242.90	539.45	589.22	1.72746	.548	.694	1193
420.000	879.670	5.017	.19934	2.337	255.47	551.44	603.12	1.74344	.558	.696	1215
440.000	899.670	4.842	.20653	2.231	267.69	563.53	617.07	1.75912	.567	.699	1236
460.000	919.670	4.682	.21356	2.136	279.59	575.73	631.09	1.77454	.577	.703	1256
480.000	939.670	4.536	.22047	2.050	291.19	588.05	645.20	1.78972	.586	.708	1276
500.000	959.670	4.400	.22725	1.971	302.53	600.50	659.42	1.80469	.596	.713	1295
520.000	979.670	4.275	.23393	1.899	313.63	613.10	673.74	1.81946	.605	.719	1314
540.000	999.670	4.158	.24051	1.834	324.51	625.83	688.18	1.83405	.614	.725	1332
560.000	1019.670	4.048	.24701	1.773	335.19	638.72	702.75	1.84848	.623	.732	1349
580.000	1039.670	3.946	.25342	1.717	345.68	651.75	717.44	1.86275	.633	.738	1366
600.000	1059.670	3.850	.25977	1.664	356.00	664.93	732.27	1.87688	.642	.745	1383
640.000	1099.670	3.673	.27226	1.570	376.17	691.75	762.33	1.90472	.660	.758	1415
680.000	1139.670	3.515	.28453	1.487	395.80	719.19	792.95	1.93207	.677	.773	1446
720.000	1179.670	3.371	.29660	1.414	414.95	747.24	824.13	1.95896	.694	.787	1476
760.000	1219.670	3.241	.30852	1.348	433.69	775.91	855.89	1.98543	.711	.801	1504
800.000	1259.670	3.122	.32028	1.289	452.06	805.18	888.21	2.01151	.727	.815	1532

Table 27. Continued.

ETHANE ISOBAR AT P = 1500 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-294.060	165.610	40.811	.02450	250.105	6790.68	76.67	83.48	.61546	.369	.539	6775
-280.000	179.670	40.293	.02482	233.292	6342.85	84.18	91.07	.65949	.365	.541	6597
-260.000	199.670	39.558	.02528	210.833	5730.02	94.90	101.92	.71672	.360	.543	6330
-240.000	219.670	38.821	.02576	190.404	5159.42	105.64	112.80	.76864	.355	.545	6055
-220.000	239.670	38.081	.02626	172.011	4634.95	116.42	123.71	.81619	.351	.547	5780
-200.000	259.670	37.336	.02678	155.504	4155.13	127.23	134.67	.86011	.349	.550	5507
-180.000	279.670	36.583	.02733	140.680	3716.45	138.11	145.70	.90102	.347	.553	5237
-160.000	299.670	35.821	.02792	127.333	3314.76	149.06	156.81	.93941	.347	.558	4972
-140.000	319.670	35.046	.02853	115.271	2946.12	160.12	168.04	.97568	.347	.565	4710
-120.000	339.670	34.255	.02919	104.319	2606.94	171.30	179.41	1.01017	.348	.572	4453
-100.000	359.670	33.444	.02990	94.325	2294.16	182.64	190.94	1.04316	.350	.581	4199
-80.000	379.670	32.608	.03067	85.154	2005.23	194.16	202.67	1.07490	.353	.592	3947
-60.000	399.670	31.743	.03150	76.693	1738.15	205.88	214.64	1.10560	.356	.604	3698
-40.000	419.670	30.841	.03242	68.839	1491.35	217.86	226.87	1.13546	.360	.619	3449
-20.000	439.670	29.893	.03345	61.507	1263.67	230.13	239.42	1.16468	.364	.637	3200
-.000	459.670	28.890	.03461	54.622	1054.34	242.74	252.36	1.19345	.369	.658	2950
20.000	479.670	27.816	.03595	48.120	862.91	255.86	265.84	1.22216	.380	.688	2691
40.000	499.670	26.652	.03752	41.948	689.26	269.47	279.89	1.25085	.386	.719	2437
60.000	519.670	25.370	.03942	36.064	533.61	283.71	294.65	1.27981	.394	.759	2180
80.000	539.670	23.932	.04178	30.440	396.59	298.72	310.33	1.30941	.404	.811	1921
100.000	559.670	22.275	.04489	25.067	279.49	314.77	327.24	1.34017	.414	.884	1662
120.000	579.670	20.308	.04924	19.978	184.91	332.22	345.89	1.37290	.426	.988	1409
140.000	599.670	17.931	.05577	15.306	118.63	351.59	367.08	1.41045	.453	1.135	1173
160.000	619.670	15.290	.06540	11.451	88.94	372.37	390.54	1.44892	.459	1.182	1030
180.000	639.670	12.984	.07702	8.815	87.92	391.93	413.33	1.48512	.464	1.085	976
200.000	659.670	11.250	.08889	7.118	95.77	409.25	433.94	1.51686	.469	.979	962
220.000	679.670	9.966	.10034	5.977	108.37	424.74	452.61	1.54475	.474	.892	971
240.000	699.670	9.004	.11106	5.176	123.46	438.90	469.75	1.56961	.480	.827	992
260.000	719.670	8.261	.12105	4.586	139.33	452.19	485.81	1.59224	.487	.782	1017
280.000	739.670	7.669	.13039	4.134	155.18	464.90	501.12	1.61323	.495	.751	1044
300.000	759.670	7.184	.13920	3.775	170.67	477.26	515.93	1.63298	.503	.731	1071
320.000	779.670	6.777	.14756	3.483	185.70	489.41	530.40	1.65179	.512	.717	1098
340.000	799.670	6.429	.15556	3.240	200.23	501.45	544.65	1.66984	.521	.709	1123
360.000	819.670	6.126	.16324	3.034	214.28	513.43	558.77	1.68728	.530	.704	1148
380.000	839.670	5.859	.17066	2.857	227.87	525.42	572.83	1.70422	.539	.702	1171
400.000	859.670	5.622	.17786	2.703	241.03	537.45	586.86	1.72073	.549	.702	1194
420.000	879.670	5.409	.18486	2.567	253.81	549.55	600.90	1.73688	.558	.703	1216
440.000	899.670	5.217	.19169	2.446	266.24	561.73	614.98	1.75271	.568	.705	1237
460.000	919.670	5.041	.19837	2.338	278.34	574.02	629.12	1.76825	.577	.709	1258
480.000	939.670	4.880	.20492	2.241	290.14	586.42	643.34	1.78355	.587	.713	1278
500.000	959.670	4.731	.21135	2.153	301.68	598.95	657.66	1.79863	.596	.718	1297
520.000	979.670	4.594	.21768	2.072	312.97	611.61	672.07	1.81349	.606	.723	1316
540.000	999.670	4.466	.22390	1.998	324.03	624.41	686.60	1.82817	.615	.729	1334
560.000	1019.670	4.347	.23005	1.930	334.88	637.34	701.24	1.84267	.624	.735	1352
580.000	1039.670	4.235	.23611	1.868	345.54	650.43	716.01	1.85701	.633	.741	1369
600.000	1059.670	4.131	.24210	1.809	356.02	663.66	730.90	1.87120	.642	.748	1386
640.000	1099.670	3.939	.25389	1.705	376.49	690.56	761.08	1.89916	.660	.761	1418
680.000	1139.670	3.767	.26546	1.613	396.40	718.07	791.81	1.92660	.677	.775	1449
720.000	1179.670	3.612	.27684	1.532	415.81	746.19	823.09	1.95358	.695	.789	1479
760.000	1219.670	3.472	.28805	1.459	434.79	774.92	854.93	1.98012	.711	.803	1508
800.000	1259.670	3.343	.29912	1.394	453.39	804.24	887.33	2.00626	.728	.817	1535

Table 27. Continued.

ETHANE ISOBAR AT P = 1600 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-293.864	165.806	40.818	.02450	250.146	6804.80	76.71	83.97	.61569	.370	.539	6781
-280.000	179.670	40.309	.02481	233.597	6364.62	84.11	91.46	.65907	.366	.541	6606
-260.000	199.670	39.575	.02527	211.163	5753.05	94.81	102.30	.71629	.360	.543	6340
-240.000	219.670	38.840	.02575	190.752	5183.23	105.55	113.18	.76819	.355	.544	6067
-220.000	239.670	38.102	.02625	172.374	4659.28	116.31	124.08	.81572	.352	.546	5792
-200.000	259.670	37.360	.02677	155.878	4179.86	127.11	135.04	.85962	.349	.549	5520
-180.000	279.670	36.610	.02731	141.065	3741.51	137.97	146.06	.90050	.348	.553	5252
-160.000	299.670	35.851	.02789	127.728	3340.14	148.90	157.17	.93886	.347	.558	4987
-140.000	319.670	35.079	.02851	115.677	2971.83	159.94	168.38	.97509	.347	.564	4727
-120.000	339.670	34.293	.02916	104.738	2633.01	171.10	179.74	1.00954	.349	.572	4471
-100.000	359.670	33.487	.02986	94.758	2320.63	182.41	191.25	1.04248	.351	.580	4218
-80.000	379.670	32.658	.03062	85.606	2032.16	193.89	202.96	1.07416	.353	.591	3969
-60.000	399.670	31.800	.03145	77.166	1765.60	205.58	214.90	1.10479	.356	.603	3721
-40.000	419.670	30.907	.03235	69.340	1519.38	217.51	227.09	1.13457	.360	.617	3475
-20.000	439.670	29.972	.03336	62.041	1292.35	229.72	239.60	1.16368	.364	.634	3229
-.000	459.670	28.983	.03450	55.197	1083.74	242.25	252.47	1.19231	.369	.654	2982
20.000	479.670	27.930	.03580	48.747	893.09	255.27	265.88	1.22084	.380	.683	2727
40.000	499.670	26.794	.03732	42.642	720.26	268.75	279.81	1.24930	.386	.712	2479
60.000	519.670	25.552	.03914	36.844	565.41	282.80	294.40	1.27792	.394	.748	2229
80.000	539.670	24.174	.04137	31.331	429.06	297.55	309.81	1.30701	.404	.795	1978
100.000	559.670	22.614	.04422	26.101	312.23	313.18	326.29	1.33699	.414	.856	1729
120.000	579.670	20.807	.04806	21.186	216.79	329.95	344.19	1.36841	.425	.938	1489
140.000	599.670	18.688	.05351	16.686	146.46	348.23	364.08	1.40376	.451	1.056	1259
160.000	619.670	16.315	.06129	12.845	107.20	367.83	385.99	1.43969	.457	1.121	1103
180.000	639.670	14.064	.07110	9.995	97.79	387.06	408.12	1.47484	.464	1.075	1025
200.000	659.670	12.261	.08156	8.077	102.50	404.56	428.73	1.50657	.469	.986	999
220.000	679.670	10.877	.09194	6.761	111.82	420.43	447.67	1.53487	.475	.910	996
240.000	699.670	9.812	.10192	5.825	124.59	435.03	465.22	1.56032	.481	.848	1008
260.000	719.670	8.981	.11135	5.134	139.08	448.70	481.69	1.58354	.489	.802	1028
280.000	739.670	8.316	.12024	4.606	154.17	461.75	497.38	1.60503	.496	.769	1051
300.000	759.670	7.773	.12865	4.189	169.27	474.39	512.51	1.62522	.504	.746	1076
320.000	779.670	7.318	.13665	3.851	184.13	486.77	527.26	1.64439	.513	.730	1101
340.000	799.670	6.930	.14430	3.572	198.63	499.00	541.76	1.66275	.522	.720	1126
360.000	819.670	6.594	.15164	3.336	212.72	511.16	556.09	1.68045	.531	.714	1150
380.000	839.670	6.300	.15873	3.134	226.41	523.30	570.32	1.69761	.540	.710	1174
400.000	859.670	6.038	.16560	2.959	239.71	535.45	584.52	1.71431	.550	.709	1196
420.000	879.670	5.804	.17228	2.805	252.64	547.66	598.70	1.73063	.559	.710	1218
440.000	899.670	5.593	.17879	2.669	265.22	559.94	612.92	1.74660	.569	.712	1240
460.000	919.670	5.401	.18516	2.547	277.49	572.32	627.18	1.76228	.578	.715	1260
480.000	939.670	5.225	.19139	2.438	289.46	584.80	641.51	1.77770	.588	.718	1280
500.000	959.670	5.063	.19750	2.339	301.16	597.40	655.92	1.79287	.597	.723	1299
520.000	979.670	4.914	.20351	2.250	312.62	610.13	670.42	1.80783	.606	.728	1318
540.000	999.670	4.775	.20943	2.167	323.84	622.98	685.03	1.82259	.615	.733	1336
560.000	1019.670	4.646	.21526	2.092	334.85	635.98	699.75	1.83717	.625	.739	1354
580.000	1039.670	4.525	.22101	2.022	345.66	649.11	714.59	1.85158	.634	.745	1372
600.000	1059.670	4.411	.22669	1.958	356.28	662.39	729.55	1.86583	.643	.751	1388
640.000	1099.670	4.204	.23786	1.842	377.04	689.38	759.85	1.89390	.660	.764	1421
680.000	1139.670	4.019	.24881	1.741	397.21	716.96	790.68	1.92144	.678	.778	1452
720.000	1179.670	3.852	.25958	1.652	416.86	745.15	822.05	1.94850	.695	.791	1482
760.000	1219.670	3.701	.27018	1.572	436.06	773.93	853.98	1.97511	.712	.805	1511
800.000	1259.670	3.563	.28064	1.501	454.87	803.31	886.46	2.00131	.728	.819	1539

Table 27. Continued.

ETHANE ISOBAR AT P = 1700 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-293.667	166.003	40.826	.02449	250.189	6818.92	76.75	84.46	.61592	.370	.539	6787
-280.000	179.670	40.325	.02480	233.901	6386.35	84.04	91.84	.65865	.366	.541	6615
-260.000	199.670	39.593	.02526	211.493	5776.08	94.73	102.68	.71585	.360	.543	6350
-240.000	219.670	38.860	.02573	191.099	5206.99	105.45	113.55	.76774	.355	.544	6078
-220.000	239.670	38.124	.02623	172.735	4683.58	116.20	124.46	.81525	.352	.546	5805
-200.000	259.670	37.384	.02675	156.250	4204.55	126.99	135.41	.85912	.349	.549	5534
-180.000	279.670	36.637	.02730	141.448	3766.53	137.83	146.42	.89998	.348	.553	5266
-160.000	299.670	35.881	.02787	128.122	3365.46	148.74	157.52	.93831	.347	.557	5003
-140.000	319.670	35.113	.02848	116.081	2997.47	159.76	168.72	.97451	.348	.563	4744
-120.000	339.670	34.330	.02913	105.154	2658.99	170.90	180.07	1.00892	.349	.571	4489
-100.000	359.670	33.530	.02982	95.189	2347.00	182.18	191.57	1.04181	.351	.579	4238
-80.000	379.670	32.707	.03057	86.054	2058.97	193.63	203.25	1.07343	.353	.590	3990
-60.000	399.670	31.856	.03139	77.635	1792.90	205.28	215.16	1.10399	.356	.601	3744
-40.000	419.670	30.972	.03229	69.834	1547.24	217.16	227.32	1.13369	.360	.615	3500
-20.000	439.670	30.048	.03328	62.566	1320.82	229.31	239.79	1.16270	.364	.631	3257
-.000	459.670	29.074	.03439	55.761	1112.87	241.77	252.60	1.19120	.369	.651	3014
20.000	479.670	28.040	.03566	49.360	922.92	254.70	265.92	1.21956	.380	.678	2762
40.000	499.670	26.930	.03713	43.316	750.81	268.06	279.75	1.24780	.387	.705	2519
60.000	519.670	25.725	.03887	37.594	596.65	281.94	294.18	1.27611	.394	.739	2275
80.000	539.670	24.399	.04098	32.177	460.85	296.46	309.36	1.30477	.403	.781	2032
100.000	559.670	22.918	.04363	27.065	344.19	311.74	325.48	1.33409	.413	.833	1792
120.000	579.670	21.237	.04709	22.289	248.01	327.97	342.80	1.36448	.424	.901	1562
140.000	599.670	19.313	.05178	17.926	174.77	345.44	361.74	1.39822	.450	.997	1339
160.000	619.670	17.168	.05825	14.135	128.51	364.05	382.39	1.43210	.456	1.062	1177
180.000	639.670	15.028	.06654	11.156	110.48	382.75	403.69	1.46593	.463	1.054	1079
200.000	659.670	13.200	.07576	9.042	110.95	400.28	424.13	1.49740	.469	.986	1039
220.000	679.670	11.749	.08511	7.566	117.76	416.37	443.16	1.52583	.476	.919	1026
240.000	699.670	10.605	.09430	6.500	128.00	431.28	460.96	1.55164	.483	.863	1029
260.000	719.670	9.696	.10313	5.708	140.71	445.29	477.75	1.57530	.490	.818	1043
280.000	739.670	8.965	.11155	5.101	154.68	458.64	493.75	1.59723	.497	.784	1062
300.000	759.670	8.364	.11956	4.623	169.12	471.54	509.18	1.61781	.506	.760	1085
320.000	779.670	7.862	.12719	4.236	183.60	484.15	524.19	1.63732	.514	.743	1108
340.000	799.670	7.435	.13450	3.918	197.90	496.57	538.91	1.65597	.523	.731	1131
360.000	819.670	7.066	.14153	3.650	211.92	508.89	553.45	1.67392	.532	.723	1155
380.000	839.670	6.742	.14832	3.421	225.61	521.17	567.86	1.69129	.541	.719	1178
400.000	859.670	6.456	.15489	3.224	238.96	533.46	582.21	1.70819	.551	.717	1200
420.000	879.670	6.201	.16127	3.051	251.98	545.78	596.54	1.72466	.560	.717	1222
440.000	899.670	5.971	.16749	2.899	264.67	558.16	610.88	1.74078	.569	.718	1243
460.000	919.670	5.762	.17356	2.763	277.06	570.62	625.26	1.75659	.579	.720	1263
480.000	939.670	5.571	.17951	2.641	289.17	583.19	639.70	1.77212	.588	.723	1283
500.000	959.670	5.395	.18534	2.532	301.00	595.86	654.20	1.78739	.597	.727	1303
520.000	979.670	5.234	.19107	2.432	312.59	608.65	668.80	1.80244	.607	.732	1321
540.000	999.670	5.084	.19671	2.341	323.95	621.56	683.49	1.81729	.616	.737	1340
560.000	1019.670	4.944	.20226	2.257	335.10	634.61	698.28	1.83194	.625	.743	1358
580.000	1039.670	4.814	.20773	2.180	346.04	647.80	713.19	1.84642	.634	.748	1375
600.000	1059.670	4.692	.21314	2.109	356.80	661.12	728.22	1.86074	.643	.754	1392
640.000	1099.670	4.469	.22376	1.982	377.81	688.20	758.64	1.88891	.661	.767	1425
680.000	1139.670	4.271	.23416	1.871	398.22	715.86	789.57	1.91655	.678	.780	1456
720.000	1179.670	4.092	.24438	1.774	418.10	744.11	821.04	1.94368	.695	.793	1486
760.000	1219.670	3.930	.25444	1.687	437.51	772.95	853.04	1.97036	.712	.807	1515
800.000	1259.670	3.783	.26435	1.609	456.52	802.38	885.60	1.99662	.728	.821	1543

Table 27. Continued.

ETHANE ISOBAR AT P = 1800 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-293.471	166.199	40.333	.02449	250.232	6833.03	76.79	84.95	.61615	.370	.539	6792
-280.000	179.670	40.340	.02479	234.205	6408.02	83.96	92.23	.65823	.366	.541	6624
-260.000	199.670	39.610	.02525	211.821	5799.01	94.65	103.06	.71542	.360	.543	6361
-240.000	219.670	38.879	.02572	191.446	5230.72	105.36	113.93	.76729	.356	.544	6089
-220.000	239.670	38.145	.02622	173.095	4707.83	116.09	124.83	.81478	.352	.546	5817
-200.000	259.670	37.407	.02673	156.622	4229.19	126.86	135.77	.85863	.349	.549	5547
-180.000	279.670	36.663	.02728	141.829	3791.49	137.69	146.78	.89946	.348	.552	5281
-160.000	299.670	35.910	.02785	128.513	3390.72	148.59	157.87	.93776	.347	.557	5018
-140.000	319.670	35.146	.02845	116.484	3023.04	159.58	169.07	.97393	.348	.563	4761
-120.000	339.670	34.368	.02910	105.569	2684.90	170.70	180.39	1.00830	.349	.570	4507
-100.000	359.670	33.572	.02979	95.617	2373.28	181.95	191.88	1.04115	.351	.579	4257
-80.000	379.670	32.755	.03053	86.498	2085.67	193.37	203.55	1.07271	.353	.588	4011
-60.000	399.670	31.912	.03134	78.099	1820.07	204.98	215.43	1.10321	.356	.600	3767
-40.000	419.670	31.037	.03222	70.322	1574.92	216.82	227.56	1.13282	.360	.613	3525
-20.000	439.670	30.123	.03320	63.084	1349.09	228.91	239.98	1.16174	.364	.629	3284
-.000	459.670	29.163	.03429	56.316	1141.74	241.31	252.74	1.19011	.369	.647	3044
20.000	479.670	28.146	.03553	49.960	952.43	254.14	265.99	1.21832	.380	.674	2797
40.000	499.670	27.060	.03695	43.971	780.96	267.39	279.71	1.24635	.387	.699	2558
60.000	519.670	25.888	.03863	38.318	627.38	281.13	294.00	1.27439	.395	.731	2320
80.000	539.670	24.609	.04064	32.984	492.02	295.43	308.98	1.30266	.403	.768	2083
100.000	559.670	23.196	.04311	27.972	375.45	310.42	324.79	1.33143	.413	.815	1851
120.000	579.670	21.618	.04626	23.309	278.62	326.22	341.63	1.36099	.424	.872	1629
140.000	599.670	19.843	.05040	19.057	203.15	343.04	359.84	1.39349	.449	.953	1413
160.000	619.670	17.884	.05592	15.325	151.72	360.87	379.51	1.42574	.455	1.010	1249
180.000	639.670	15.876	.06299	12.279	126.05	378.97	399.96	1.45823	.462	1.024	1137
200.000	659.670	14.064	.07110	10.007	120.89	396.38	420.08	1.48920	.469	.981	1081
220.000	679.670	12.572	.07954	8.381	125.50	412.59	439.10	1.51761	.476	.922	1060
240.000	699.670	11.371	.08795	7.194	133.47	427.71	457.02	1.54360	.483	.872	1056
260.000	719.670	10.399	.09616	6.302	144.21	441.97	474.03	1.56756	.491	.830	1063
280.000	739.670	9.607	.10409	5.615	156.78	455.59	490.28	1.58984	.498	.797	1077
300.000	759.670	8.954	.11168	5.073	170.29	468.73	505.95	1.61075	.507	.772	1096
320.000	779.670	8.406	.11896	4.637	184.17	481.55	521.20	1.63056	.515	.754	1117
340.000	799.670	7.940	.12594	4.277	198.11	494.16	536.14	1.64948	.524	.741	1139
360.000	819.670	7.538	.13267	3.976	211.92	506.64	550.86	1.66767	.533	.732	1161
380.000	839.670	7.186	.13916	3.719	225.51	519.06	565.45	1.68525	.542	.727	1183
400.000	859.670	6.875	.14545	3.498	238.83	531.47	579.95	1.70232	.551	.724	1205
420.000	879.670	6.598	.15157	3.305	251.87	543.90	594.42	1.71896	.561	.723	1226
440.000	899.670	6.348	.15752	3.136	264.62	556.38	608.88	1.73522	.570	.724	1247
460.000	919.670	6.123	.16333	2.985	277.08	568.93	623.37	1.75115	.579	.726	1267
480.000	939.670	5.916	.16902	2.850	289.28	581.58	637.91	1.76679	.589	.728	1287
500.000	959.670	5.728	.17460	2.729	301.22	594.32	652.51	1.78216	.598	.732	1306
520.000	979.670	5.553	.18007	2.619	312.92	607.18	667.19	1.79730	.607	.736	1325
540.000	999.670	5.392	.18545	2.518	324.39	620.15	681.97	1.81223	.616	.741	1344
560.000	1019.670	5.242	.19075	2.427	335.65	633.26	696.84	1.82696	.626	.746	1361
580.000	1039.670	5.103	.19598	2.342	346.71	646.49	711.81	1.84150	.635	.752	1379
600.000	1059.670	4.972	.20113	2.264	357.58	659.86	726.90	1.85588	.644	.757	1396
640.000	1099.670	4.733	.21126	2.125	378.82	687.02	757.44	1.88417	.661	.770	1429
680.000	1139.670	4.521	.22118	2.004	399.44	714.76	788.48	1.91189	.679	.792	1460
720.000	1179.670	4.331	.23091	1.898	419.52	743.07	820.04	1.93910	.696	.796	1490
760.000	1219.670	4.158	.24048	1.803	439.13	771.97	852.13	1.96586	.712	.809	1520
800.000	1259.670	4.001	.24991	1.719	458.32	801.45	884.75	1.99218	.729	.822	1548

Table 27. Continued.

ETHANE ISOBAR AT P = 2000 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DO PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-293.080	166.590	40.848	.02448	250.319	6861.24	76.87	85.94	.61661	.370	.539	6804
-280.000	179.670	40.372	.02477	234.811	6451.21	83.82	93.00	.65740	.366	.541	6642
-260.000	199.670	39.644	.02522	212.476	5844.74	94.48	103.83	.71456	.361	.542	6381
-240.000	219.670	38.917	.02570	192.136	5278.04	105.17	114.69	.76640	.356	.544	6112
-220.000	239.670	38.187	.02619	173.812	4756.20	115.88	125.58	.81384	.352	.545	5842
-200.000	259.670	37.454	.02670	157.361	4278.34	126.62	136.51	.85766	.350	.548	5574
-180.000	279.670	36.716	.02724	142.588	3841.26	137.42	147.50	.89844	.348	.551	5309
-160.000	299.670	35.969	.02780	129.291	3441.08	148.28	158.58	.93668	.348	.556	5049
-140.000	319.670	35.212	.02840	117.282	3073.98	159.23	169.75	.97278	.348	.562	4793
-120.000	339.670	34.442	.02903	106.390	2736.48	170.30	181.06	1.00707	.349	.569	4542
-100.000	359.670	33.656	.02971	96.464	2425.56	181.50	192.51	1.03983	.351	.577	4295
-80.000	379.670	32.850	.03044	87.376	2138.73	192.86	204.14	1.07130	.354	.586	4052
-60.000	399.670	32.020	.03123	79.014	1874.00	204.40	215.97	1.10167	.357	.597	3812
-40.000	419.670	31.161	.03209	71.282	1629.81	216.15	228.04	1.13113	.360	.610	3574
-20.000	439.670	30.268	.03304	64.099	1405.01	228.15	240.38	1.15986	.365	.625	3338
-.000	459.670	29.334	.03409	57.396	1198.75	240.41	253.04	1.18801	.370	.642	3104
20.000	479.670	28.350	.03527	51.121	1010.56	253.09	266.15	1.21593	.380	.666	2863
40.000	499.670	27.307	.03662	45.230	840.16	266.13	279.70	1.24359	.387	.689	2632
60.000	519.670	26.192	.03818	39.695	687.52	279.60	293.74	1.27115	.395	.716	2404
80.000	539.670	24.992	.04001	34.500	552.78	293.55	308.37	1.29877	.403	.748	2179
100.000	559.670	23.690	.04221	29.649	436.21	308.06	323.69	1.32664	.413	.785	1960
120.000	579.670	22.268	.04491	25.161	338.23	323.18	339.81	1.35493	.423	.828	1751
140.000	599.670	20.711	.04828	21.075	259.48	339.08	356.97	1.38565	.448	.891	1546
160.000	619.670	19.027	.05256	17.451	200.98	355.75	375.22	1.41558	.453	.934	1384
180.000	639.670	17.270	.05790	14.369	163.84	372.76	394.21	1.44574	.461	.961	1258
200.000	659.670	15.570	.06422	11.896	146.82	389.64	413.42	1.47532	.469	.954	1177
220.000	679.670	14.062	.07111	10.014	144.23	405.84	432.18	1.50334	.476	.919	1135
240.000	699.670	12.793	.07817	8.603	148.83	421.19	450.14	1.52938	.484	.878	1118
260.000	719.670	11.736	.08521	7.526	156.11	435.78	467.33	1.55361	.492	.843	1113
280.000	739.670	10.852	.09215	6.686	165.52	449.77	483.89	1.57631	.500	.814	1117
300.000	759.670	10.110	.09891	6.018	176.61	463.29	499.93	1.59770	.508	.790	1128
320.000	779.670	9.481	.10547	5.477	188.76	476.48	515.54	1.61799	.517	.772	1143
340.000	799.670	8.943	.11182	5.032	201.50	489.42	530.84	1.63736	.526	.758	1160
360.000	819.670	8.477	.11797	4.659	214.51	502.21	545.90	1.65596	.535	.748	1179
380.000	839.670	8.070	.12392	4.344	227.57	514.90	560.79	1.67391	.544	.742	1199
400.000	859.670	7.710	.12970	4.072	240.56	527.54	575.58	1.69132	.553	.737	1219
420.000	879.670	7.390	.13532	3.837	253.42	540.19	590.30	1.70825	.562	.735	1239
440.000	899.670	7.103	.14079	3.630	266.09	552.86	605.00	1.72478	.571	.735	1259
460.000	919.670	6.843	.14614	3.448	278.55	565.58	619.71	1.74094	.581	.736	1278
480.000	939.670	6.606	.15137	3.285	290.80	578.38	634.44	1.75679	.590	.738	1298
500.000	959.670	6.390	.15649	3.138	302.83	591.27	649.23	1.77236	.599	.741	1317
520.000	979.670	6.191	.16152	3.006	314.65	604.25	664.07	1.78768	.608	.744	1335
540.000	999.670	6.007	.16647	2.886	326.27	617.35	679.00	1.80276	.617	.748	1353
560.000	1019.670	5.837	.17133	2.777	337.69	630.56	694.01	1.81763	.627	.753	1371
580.000	1039.670	5.678	.17612	2.676	348.91	643.90	709.13	1.83231	.636	.758	1388
600.000	1059.670	5.529	.18085	2.584	359.96	657.36	724.34	1.84680	.644	.763	1405
640.000	1099.670	5.260	.19013	2.419	381.55	684.69	755.11	1.87530	.662	.775	1438
680.000	1139.670	5.020	.19920	2.277	402.54	712.57	786.35	1.90320	.679	.787	1470
720.000	1179.670	4.806	.20809	2.152	422.97	741.02	818.08	1.93057	.696	.800	1500
760.000	1219.670	4.612	.21683	2.042	442.92	770.03	850.34	1.95746	.713	.813	1529
800.000	1259.670	4.436	.22543	1.944	462.44	799.62	883.11	1.98390	.729	.826	1557

Table 27. Continued.

Table 27. Continued.

ETHANE ISOBAR AT P = 2200 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-292.690	166.980	40.863	.02447	250.410	6889.42	76.95	86.92	.61706	.370	.539	6816
-280.000	179.670	40.402	.02475	235.414	6494.19	83.68	93.76	.65658	.366	.540	6660
-260.000	199.670	39.678	.02520	213.127	5890.29	94.32	104.59	.71371	.361	.542	6401
-240.000	219.670	38.954	.02567	192.822	5325.19	104.98	115.44	.76551	.356	.543	6134
-220.000	239.670	38.229	.02616	174.524	4804.41	115.67	126.33	.81292	.352	.545	5866
-200.000	259.670	37.501	.02667	158.095	4327.30	126.38	137.25	.85669	.350	.547	5600
-180.000	279.670	36.767	.02720	143.341	3890.84	137.15	148.23	.89742	.348	.551	5337
-160.000	299.670	36.026	.02776	130.063	3491.21	147.98	159.28	.93561	.348	.555	5079
-140.000	319.670	35.276	.02835	118.073	3124.67	158.89	170.44	.97165	.348	.561	4826
-120.000	339.670	34.514	.02897	107.201	2787.76	169.92	181.72	1.00587	.350	.567	4577
-100.000	359.670	33.737	.02964	97.300	2477.48	181.07	193.14	1.03854	.352	.575	4333
-80.000	379.670	32.942	.03036	88.241	2191.38	192.37	204.74	1.06991	.354	.584	4093
-60.000	399.670	32.125	.03113	79.913	1927.43	203.84	216.52	1.10016	.357	.595	3856
-40.000	419.670	31.282	.03197	72.221	1684.10	215.51	228.53	1.12949	.361	.607	3622
-20.000	439.670	30.408	.03289	65.087	1460.19	227.41	240.80	1.15805	.365	.621	3391
-.000	459.670	29.497	.03390	58.443	1254.89	239.56	253.37	1.18599	.370	.636	3161
20.000	479.670	28.543	.03504	52.238	1067.61	252.09	266.36	1.21365	.381	.659	2927
40.000	499.670	27.537	.03631	46.430	898.07	264.95	279.75	1.24099	.387	.680	2703
60.000	519.670	26.471	.03778	40.992	746.12	278.19	293.58	1.26814	.395	.704	2482
80.000	539.670	25.336	.03947	35.909	611.75	291.85	307.93	1.29523	.403	.731	2267
100.000	559.670	24.120	.04146	31.181	495.03	305.98	322.87	1.32240	.413	.763	2058
120.000	579.670	22.813	.04383	26.821	396.02	320.60	338.46	1.34977	.422	.797	1860
140.000	599.670	21.410	.04671	22.855	314.83	335.86	354.88	1.37925	.447	.849	1664
160.000	619.670	19.914	.05022	19.316	251.67	351.73	372.18	1.40762	.452	.881	1507
180.000	639.670	18.356	.05448	16.245	206.87	367.90	390.09	1.43606	.459	.908	1376
200.000	659.670	16.802	.05952	13.679	180.05	384.13	408.38	1.46421	.467	.917	1279
220.000	679.670	15.347	.06516	11.621	168.65	400.08	426.62	1.49145	.476	.904	1218
240.000	699.670	14.060	.07112	10.017	167.76	415.45	444.43	1.51728	.484	.876	1186
260.000	719.670	12.956	.07718	8.771	172.39	430.21	461.65	1.54155	.492	.847	1171
280.000	739.670	12.015	.08323	7.789	179.30	444.42	478.32	1.56440	.501	.822	1167
300.000	759.670	11.210	.08920	7.000	187.84	458.21	494.55	1.58604	.509	.801	1170
320.000	779.670	10.518	.09508	6.357	197.84	471.66	510.40	1.60664	.518	.785	1178
340.000	799.670	9.919	.10082	5.825	208.89	484.88	525.95	1.62634	.527	.771	1190
360.000	819.670	9.397	.10641	5.379	220.63	497.92	541.27	1.64526	.536	.761	1205
380.000	839.670	8.940	.11186	5.001	232.76	510.84	556.41	1.66351	.545	.754	1221
400.000	859.670	8.535	.11717	4.677	245.08	523.71	571.44	1.68120	.554	.749	1239
420.000	879.670	8.174	.12234	4.396	257.45	536.55	586.39	1.69839	.563	.746	1257
440.000	899.670	7.850	.12739	4.150	269.80	549.40	601.30	1.71515	.573	.745	1275
460.000	919.670	7.557	.13233	3.933	282.04	562.29	616.20	1.73153	.582	.745	1293
480.000	939.670	7.291	.13716	3.739	294.16	575.24	631.12	1.74758	.591	.747	1312
500.000	959.670	7.047	.14190	3.567	306.13	588.26	646.07	1.76333	.600	.749	1330
520.000	979.670	6.824	.14655	3.411	317.94	601.37	661.08	1.77880	.609	.752	1348
540.000	999.670	6.617	.15112	3.270	329.58	614.59	676.15	1.79403	.618	.756	1365
560.000	1019.670	6.426	.15561	3.141	341.05	627.91	691.30	1.80904	.627	.760	1383
580.000	1039.670	6.248	.16004	3.023	352.35	641.34	706.54	1.82384	.636	.764	1400
600.000	1059.670	6.082	.16441	2.915	363.49	654.90	721.87	1.83845	.645	.769	1416
640.000	1099.670	5.781	.17297	2.724	385.31	682.39	752.86	1.86715	.663	.780	1447
680.000	1139.670	5.515	.18134	2.558	406.54	710.42	784.29	1.89522	.680	.792	148
720.000	1179.670	5.276	.18953	2.414	427.24	738.99	816.20	1.92274	.697	.804	1511
760.000	1219.670	5.061	.19758	2.287	447.46	768.12	848.61	1.94976	.713	.817	1540
800.000	1259.670	4.866	.20550	2.174	467.24	797.81	881.52	1.97631	.730	.829	1568

Table 27. Continued.

ETHANE ISOBAR AT P = 2400 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-292.300	167.370	40.878	.02446	250.503	6917.57	77.03	87.90	.61751	.370	.538	6827
-280.000	179.670	40.433	.02473	236.014	6536.96	83.54	94.53	.65576	.367	.540	6678
-260.000	199.670	39.712	.02518	213.776	5935.67	94.16	105.35	.71286	.361	.542	6422
-240.000	219.670	38.992	.02565	193.505	5372.18	104.80	116.20	.76463	.356	.543	6157
-220.000	239.670	38.271	.02613	175.232	4852.45	115.46	127.07	.81200	.353	.545	5890
-200.000	259.670	37.547	.02663	158.824	4376.09	126.15	137.99	.85573	.350	.547	5626
-180.000	279.670	36.818	.02716	144.089	3940.22	136.88	148.95	.89642	.349	.550	5365
-160.000	299.670	36.083	.02771	130.828	3541.16	147.68	159.99	.93455	.348	.554	5109
-140.000	319.670	35.340	.02830	118.856	3175.11	158.56	171.13	.97053	.349	.560	4858
-120.000	339.670	34.585	.02891	108.004	2838.75	169.54	182.39	1.00468	.350	.566	4612
-100.000	359.670	33.817	.02957	98.126	2529.07	180.64	193.78	1.03728	.352	.574	4370
-80.000	379.670	33.032	.03027	89.093	2243.62	191.89	205.34	1.06855	.354	.582	4132
-60.000	399.670	32.227	.03103	80.795	1980.39	203.30	217.09	1.09869	.357	.592	3899
-40.000	419.670	31.399	.03185	73.141	1737.81	214.89	229.04	1.12789	.361	.604	3668
-20.000	439.670	30.542	.03274	66.050	1514.70	226.70	241.25	1.15629	.365	.617	3441
-.000	459.670	29.653	.03372	59.459	1310.20	238.74	253.73	1.18404	.370	.632	3217
20.000	479.670	28.725	.03481	53.315	1123.70	251.14	266.61	1.21148	.381	.653	2988
40.000	499.670	27.753	.03603	47.579	954.83	263.85	279.86	1.23854	.387	.672	2770
60.000	519.670	26.730	.03741	42.223	803.39	276.89	293.52	1.26533	.395	.694	2557
80.000	539.670	25.648	.03899	37.231	669.22	290.30	307.63	1.29198	.403	.718	2349
100.000	559.670	24.502	.04081	32.600	552.23	304.12	322.25	1.31858	.413	.745	2149
120.000	579.670	23.286	.04295	28.339	452.27	318.35	337.43	1.34523	.422	.774	1959
140.000	599.670	21.996	.04546	24.462	369.11	333.12	353.32	1.37380	.446	.818	1770
160.000	619.670	20.638	.04845	20.989	302.54	348.41	369.94	1.40105	.451	.844	1618
180.000	639.670	19.230	.05200	17.940	252.36	363.94	387.05	1.42823	.458	.867	1487
200.000	659.670	17.811	.05614	15.332	218.21	379.61	404.56	1.45517	.467	.881	1381
220.000	679.670	16.441	.06082	13.166	198.77	395.18	422.21	1.48153	.475	.881	1306
240.000	699.670	15.179	.06588	11.414	191.15	410.43	439.71	1.50691	.484	.867	1259
260.000	719.670	14.058	.07113	10.018	191.45	425.23	456.84	1.53105	.492	.846	1234
280.000	739.670	13.082	.07644	8.903	196.15	439.57	473.54	1.55394	.501	.824	1222
300.000	759.670	12.236	.08173	8.001	202.84	453.52	489.84	1.57569	.510	.806	1219
320.000	779.670	11.498	.08697	7.261	210.80	467.16	505.81	1.59645	.519	.792	1220
340.000	799.670	10.853	.09214	6.644	220.00	480.58	521.53	1.61635	.528	.780	1227
360.000	819.670	10.286	.09722	6.126	230.19	493.82	537.03	1.63549	.537	.771	1237
380.000	839.670	9.785	.10220	5.685	241.07	506.95	552.37	1.65398	.546	.764	1249
400.000	859.670	9.340	.10707	5.306	252.42	520.00	567.58	1.67189	.555	.759	1264
420.000	879.670	8.941	.11184	4.978	264.05	533.02	582.72	1.68930	.564	.755	1279
440.000	899.670	8.583	.11650	4.691	275.83	546.03	597.81	1.70626	.573	.754	1296
460.000	919.670	8.259	.12107	4.437	287.65	559.08	612.88	1.72283	.583	.754	1312
480.000	939.670	7.965	.12555	4.213	299.45	572.16	627.96	1.73905	.592	.754	1329
500.000	959.670	7.695	.12995	4.012	311.20	585.32	643.07	1.75496	.601	.756	1346
520.000	979.670	7.448	.13426	3.831	322.85	598.55	658.22	1.77058	.610	.759	1363
540.000	999.670	7.220	.13850	3.667	334.39	611.87	673.42	1.78595	.619	.762	1380
560.000	1019.670	7.009	.14268	3.519	345.80	625.29	688.70	1.80108	.628	.766	1397
580.000	1039.670	6.812	.14679	3.383	357.09	638.82	704.06	1.81600	.637	.770	1414
600.000	1059.670	6.629	.15085	3.258	368.23	652.47	719.51	1.83071	.646	.775	1430
640.000	1099.670	6.297	.15880	3.038	390.13	680.12	750.69	1.85960	.663	.785	1462
680.000	1139.670	6.004	.16656	2.848	411.49	708.29	782.31	1.88784	.681	.796	1493
720.000	1179.670	5.742	.17417	2.683	432.36	736.99	814.39	1.91551	.698	.808	1523
760.000	1219.670	5.506	.18163	2.539	452.76	766.23	846.95	1.94265	.714	.820	1552
800.000	1259.670	5.292	.18897	2.410	472.74	796.01	880.00	1.96931	.730	.833	1580

Table 27. Continued.

Table 27. Continued.

ETHANE ISOBAR AT P = 2600 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DO PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-291.912	167.758	40.893	.02445	250.598	6945.69	77.11	88.88	.61796	.370	.538	6839
-280.000	179.670	40.464	.02471	236.612	6579.53	83.40	95.30	.65494	.367	.540	6696
-260.000	199.670	39.746	.02516	214.421	5980.87	94.00	106.12	.71202	.362	.541	6442
-240.000	219.670	39.029	.02562	194.184	5419.01	104.62	116.96	.76376	.357	.543	6179
-220.000	239.670	38.312	.02610	175.937	4900.33	115.26	127.82	.81109	.353	.544	5914
-200.000	259.670	37.592	.02660	159.548	4424.71	125.92	138.73	.85478	.351	.546	5652
-180.000	279.670	36.869	.02712	144.830	3989.42	136.62	149.68	.89542	.349	.549	5393
-160.000	299.670	36.139	.02767	131.587	3590.86	147.39	160.71	.93351	.349	.554	5139
-140.000	319.670	35.402	.02825	119.631	3225.31	158.23	171.83	.96943	.349	.559	4890
-120.000	339.670	34.655	.02886	108.798	2889.46	169.17	183.06	1.00351	.350	.565	4646
-100.000	359.670	33.895	.02950	98.941	2580.34	180.23	194.43	1.03603	.352	.572	4406
-80.000	379.670	33.120	.03019	89.932	2295.48	191.42	205.95	1.06721	.355	.581	4172
-60.000	399.670	32.327	.03093	81.663	2032.90	202.76	217.66	1.09725	.358	.590	3941
-40.000	419.670	31.512	.03173	74.042	1791.00	214.29	229.57	1.12632	.361	.601	3714
-20.000	439.670	30.672	.03260	66.992	1568.59	226.01	241.71	1.15458	.366	.613	3491
-.000	459.670	29.803	.03355	60.447	1364.78	237.95	254.11	1.18216	.371	.627	3271
20.000	479.670	28.899	.03460	54.358	1178.92	250.24	266.90	1.20939	.381	.648	3046
40.000	499.670	27.957	.03577	48.683	1010.60	262.80	280.02	1.23620	.388	.665	2834
60.000	519.670	26.970	.03708	43.396	859.50	275.67	293.52	1.26268	.395	.685	2627
80.000	539.670	25.935	.03856	38.480	725.40	288.87	307.43	1.28895	.403	.707	2426
100.000	559.670	24.847	.04025	33.929	608.07	302.42	321.80	1.31509	.412	.730	2233
120.000	579.670	23.703	.04219	29.745	507.20	316.34	336.65	1.34117	.422	.755	2050
140.000	599.670	22.502	.04444	25.937	422.38	330.73	352.13	1.36903	.446	.795	1868
160.000	619.670	21.249	.04706	22.516	353.12	345.58	368.23	1.39544	.451	.816	1720
180.000	639.670	19.957	.05011	19.489	298.91	360.62	384.75	1.42167	.458	.835	1590
200.000	659.670	18.652	.05361	16.861	259.24	375.81	401.62	1.44764	.466	.851	1481
220.000	679.670	17.370	.05757	14.628	233.21	391.00	418.72	1.47317	.474	.857	1397
240.000	699.670	16.157	.06189	12.772	219.06	406.03	435.83	1.49799	.483	.853	1338
260.000	719.670	15.047	.06646	11.253	214.09	420.78	452.77	1.52187	.492	.840	1301
280.000	739.670	14.056	.07114	10.017	215.28	435.17	469.42	1.54468	.501	.824	1280
300.000	759.670	13.183	.07586	9.008	220.05	449.22	485.74	1.56646	.510	.809	1271
320.000	779.670	12.414	.08055	8.175	226.60	463.00	501.78	1.58730	.519	.796	1268
340.000	799.670	11.735	.08522	7.479	234.18	476.56	517.58	1.60731	.528	.785	1269
360.000	819.670	11.133	.08983	6.890	242.80	489.95	533.20	1.62660	.537	.777	1275
380.000	839.670	10.596	.09437	6.387	252.30	503.24	548.67	1.64525	.547	.771	1283
400.000	859.670	10.117	.09884	5.955	262.49	516.44	564.03	1.66333	.556	.766	1294
420.000	879.670	9.687	.10324	5.579	273.16	529.61	579.32	1.68091	.565	.763	1307
440.000	899.670	9.298	.10755	5.250	284.17	542.77	594.55	1.69804	.574	.761	1320
460.000	919.670	8.946	.11178	4.959	295.38	555.95	609.77	1.71476	.584	.761	1335
480.000	939.670	8.625	.11594	4.702	306.70	569.17	624.99	1.73113	.593	.761	1350
500.000	959.670	8.331	.12003	4.472	318.07	582.44	640.23	1.74718	.602	.763	1366
520.000	979.670	8.062	.12404	4.265	329.43	595.78	655.50	1.76294	.611	.765	1382
540.000	999.670	7.813	.12800	4.078	340.75	609.21	670.83	1.77843	.620	.768	1398
560.000	1019.670	7.582	.13189	3.908	352.00	622.73	686.23	1.79367	.629	.771	1414
580.000	1039.670	7.368	.13572	3.754	363.16	636.35	701.69	1.80870	.638	.775	1430
600.000	1059.670	7.168	.13951	3.612	374.23	650.08	717.24	1.82351	.647	.780	1445
640.000	1099.670	6.806	.14692	3.361	396.05	677.89	748.63	1.85258	.664	.790	1476
680.000	1139.670	6.486	.15417	3.146	417.42	706.19	780.42	1.88098	.681	.800	1507
720.000	1179.670	6.201	.16126	2.960	438.36	735.01	812.65	1.90877	.698	.812	1536
760.000	1219.670	5.945	.16822	2.797	458.86	764.36	845.35	1.93603	.715	.823	1565
800.000	1259.670	5.712	.17506	2.652	478.97	794.25	878.53	1.96280	.731	.836	1593

Table 27. Continued.

ETHANE ISOBAR AT P = 2800 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-291.525	168.145	40.907	.02445	250.696	6973.78	77.19	89.86	.61840	.370	.538	6850
-280.000	179.670	40.494	.02470	237.208	6621.88	83.27	96.07	.65413	.367	.540	6714
-260.000	199.670	39.779	.02514	215.064	6025.90	93.85	106.88	.71118	.362	.541	6462
-240.000	219.670	39.066	.02560	194.859	5465.67	104.44	117.71	.76289	.357	.542	6201
-220.000	239.670	38.352	.02607	176.637	4948.05	115.05	128.57	.81019	.353	.544	5938
-200.000	259.670	37.637	.02657	160.268	4473.16	125.69	139.47	.85384	.351	.546	5677
-180.000	279.670	36.919	.02709	145.567	4038.44	136.36	150.41	.89444	.349	.549	5420
-160.000	299.670	36.195	.02763	132.339	3640.36	147.10	161.42	.93248	.349	.553	5168
-140.000	319.670	35.464	.02820	120.400	3275.28	157.90	172.52	.96834	.349	.558	4921
-120.000	339.670	34.724	.02880	109.584	2939.91	168.81	183.74	1.00236	.351	.564	4679
-100.000	359.670	33.972	.02944	99.746	2631.29	179.82	195.08	1.03480	.353	.571	4442
-80.000	379.670	33.206	.03011	90.760	2346.99	190.96	206.57	1.06590	.355	.579	4210
-60.000	399.670	32.424	.03084	82.517	2084.98	202.25	218.24	1.09584	.358	.588	3982
-40.000	419.670	31.622	.03162	74.927	1843.69	213.70	230.10	1.12480	.362	.598	3758
-20.000	439.670	30.798	.03247	67.912	1621.89	225.35	242.18	1.15292	.366	.610	3539
-.000	459.670	29.946	.03339	61.410	1418.67	237.20	254.51	1.18035	.371	.623	3323
20.000	479.670	29.065	.03441	55.368	1233.35	249.37	267.21	1.20739	.381	.643	3103
40.000	499.670	28.149	.03552	49.747	1065.44	261.81	280.23	1.23397	.388	.659	2896
60.000	519.670	27.196	.03677	44.520	914.59	274.52	293.59	1.26018	.395	.677	2694
80.000	539.670	26.201	.03817	39.668	780.46	287.54	307.33	1.28612	.404	.697	2499
100.000	559.670	25.162	.03974	35.182	662.75	300.87	321.48	1.31187	.413	.718	2312
120.000	579.670	24.078	.04153	31.061	561.01	314.53	336.06	1.33747	.422	.740	2135
140.000	599.670	22.948	.04358	27.308	474.71	328.61	351.20	1.36477	.446	.777	1958
160.000	619.670	21.779	.04592	23.927	403.21	343.10	366.91	1.39053	.450	.794	1814
180.000	639.670	20.579	.04859	20.919	345.82	357.76	382.95	1.41601	.457	.811	1686
200.000	659.670	19.366	.05164	18.282	301.87	372.55	399.33	1.44122	.465	.826	1575
220.000	679.670	18.166	.05505	16.006	270.57	387.40	415.94	1.46603	.474	.835	1486
240.000	699.670	17.011	.05879	14.075	250.69	402.19	432.67	1.49028	.483	.837	1418
260.000	719.670	15.929	.06278	12.461	240.39	416.81	449.36	1.51380	.492	.831	1371
280.000	739.670	14.942	.06693	11.122	237.35	431.18	465.88	1.53645	.501	.821	1342
300.000	759.670	14.055	.07115	10.015	239.22	445.29	482.18	1.55819	.510	.809	1325
320.000	779.670	13.265	.07539	9.094	244.08	459.15	498.24	1.57906	.519	.797	1317
340.000	799.670	12.561	.07961	8.321	250.54	472.81	514.09	1.59913	.529	.788	1315
360.000	819.670	11.932	.08381	7.665	257.86	486.32	529.77	1.61850	.538	.781	1316
380.000	839.670	11.369	.08796	7.102	266.04	499.73	545.33	1.63726	.547	.775	1321
400.000	859.670	10.862	.09206	6.616	275.01	513.06	560.79	1.65546	.556	.771	1328
420.000	879.670	10.404	.09611	6.193	284.62	526.35	576.19	1.67316	.566	.769	1338
440.000	899.670	9.990	.10010	5.822	294.72	539.64	591.54	1.69042	.575	.767	1349
460.000	919.670	9.612	.10403	5.495	305.18	552.94	606.87	1.70728	.584	.767	1362
480.000	939.670	9.268	.10790	5.204	315.88	566.27	622.21	1.72377	.593	.767	1375
500.000	959.670	8.952	.11171	4.944	326.73	579.65	637.56	1.73994	.603	.768	1389
520.000	979.670	8.662	.11545	4.711	337.68	593.09	652.95	1.75581	.612	.771	1403
540.000	999.670	8.393	.11914	4.500	348.66	606.61	668.39	1.77141	.621	.773	1418
560.000	1019.670	8.144	.12278	4.309	359.64	620.22	683.88	1.78676	.630	.777	1433
580.000	1039.670	7.913	.12637	4.134	370.59	633.93	699.45	1.80188	.638	.780	1448
600.000	1059.670	7.698	.12991	3.975	381.50	647.74	715.10	1.81678	.647	.784	1463
640.000	1099.670	7.307	.13686	3.693	403.09	675.70	746.66	1.84601	.665	.794	1493
680.000	1139.670	6.962	.14364	3.452	424.36	704.13	778.61	1.87456	.682	.804	1522
720.000	1179.670	6.654	.15029	3.243	445.26	733.07	810.99	1.90248	.699	.815	1551
760.000	1219.670	6.377	.15681	3.060	465.78	762.52	843.83	1.92985	.715	.827	1579
800.000	1259.670	6.127	.16322	2.899	485.94	792.50	877.13	1.95672	.731	.839	1606

Table 27. Continued.

Table 27. Continued.

ETHANE ISOBAR AT P = 3000 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-291.139	168.531	40.922	.02444	250.797	7001.85	77.26	90.84	.61884	.371	.538	6862
-280.000	179.670	40.524	.02468	237.802	6664.03	83.13	96.84	.65333	.368	.540	6731
-260.000	199.670	39.812	.02512	215.704	6070.76	93.69	107.65	.71035	.362	.541	6481
-240.000	219.670	39.102	.02557	195.532	5512.17	104.27	118.47	.76203	.357	.542	6223
-220.000	239.670	38.393	.02605	177.333	4995.60	114.85	129.32	.80930	.354	.543	5962
-200.000	259.670	37.682	.02654	160.983	4521.45	125.46	140.21	.85291	.351	.545	5703
-180.000	279.670	36.968	.02705	146.298	4087.27	136.11	151.14	.89347	.350	.548	5448
-160.000	299.670	36.249	.02759	133.086	3689.67	146.81	162.14	.93145	.349	.552	5197
-140.000	319.670	35.524	.02815	121.162	3325.03	157.59	173.22	.96726	.350	.557	4952
-120.000	339.670	34.791	.02874	110.362	2990.10	168.45	184.42	1.00122	.351	.563	4712
-100.000	359.670	34.047	.02937	100.542	2681.95	179.42	195.74	1.03360	.353	.569	4477
-80.000	379.670	33.291	.03004	91.577	2398.14	190.51	207.20	1.06461	.355	.577	4248
-60.000	399.670	32.519	.03075	83.358	2136.66	201.74	218.83	1.09446	.358	.586	4023
-40.000	419.670	31.729	.03152	75.796	1895.91	213.14	230.64	1.12331	.362	.596	3802
-20.000	439.670	30.919	.03234	68.814	1674.65	224.71	242.67	1.15131	.366	.607	3586
-.000	459.670	30.085	.03324	62.349	1471.94	236.47	254.94	1.17859	.371	.620	3373
20.000	479.670	29.224	.03422	56.349	1287.06	248.55	267.55	1.20545	.382	.638	3157
40.000	499.670	28.332	.03530	50.776	1119.47	260.86	280.47	1.23183	.388	.654	2955
60.000	519.670	27.408	.03649	45.600	968.76	273.44	293.71	1.25780	.396	.670	2758
80.000	539.670	26.449	.03781	40.803	834.54	286.29	307.30	1.28346	.404	.689	2568
100.000	559.670	25.452	.03929	36.371	716.39	299.44	321.26	1.30887	.413	.708	2386
120.000	579.670	24.418	.04095	32.302	613.82	312.87	335.62	1.33407	.422	.728	2215
140.000	599.670	23.348	.04283	28.593	526.18	326.70	350.49	1.35091	.445	.762	2042
160.000	619.670	22.247	.04495	25.244	452.76	340.90	365.87	1.38613	.450	.776	1902
180.000	639.670	21.121	.04735	22.252	392.74	355.24	381.54	1.41103	.457	.791	1775
200.000	659.670	19.985	.05004	19.610	345.35	369.71	397.51	1.43561	.465	.805	1665
220.000	679.670	18.857	.05303	17.305	309.78	384.26	413.72	1.45982	.473	.815	1572
240.000	699.670	17.759	.05631	15.320	285.07	398.81	430.09	1.48355	.482	.821	1498
260.000	719.670	16.715	.05983	13.632	269.88	413.27	446.50	1.50668	.492	.820	1444
280.000	739.670	15.744	.06352	12.209	262.45	427.57	462.86	1.52909	.501	.815	1406
300.000	759.670	14.856	.06731	11.015	260.86	441.68	479.07	1.55073	.510	.807	1382
320.000	779.670	14.054	.07115	10.012	263.27	455.59	495.12	1.57158	.520	.798	1368
340.000	799.670	13.333	.07500	9.165	268.21	469.33	510.99	1.59168	.529	.790	1362
360.000	819.670	12.684	.07884	8.444	274.60	482.92	526.72	1.61111	.538	.783	1360
380.000	839.670	12.100	.08265	7.824	281.75	496.42	542.33	1.62993	.548	.778	1362
400.000	859.670	11.571	.08642	7.287	289.61	509.85	557.86	1.64821	.557	.775	1366
420.000	879.670	11.091	.09016	6.818	298.16	523.25	573.34	1.66600	.566	.773	1372
440.000	899.670	10.655	.09386	6.406	307.30	536.64	588.78	1.68336	.576	.771	1381
460.000	919.670	10.256	.09751	6.041	316.91	550.04	604.20	1.70031	.585	.771	1391
480.000	939.670	9.891	.10111	5.717	326.89	563.46	619.63	1.71691	.594	.772	1402
500.000	959.670	9.555	.10466	5.428	337.13	576.94	635.08	1.73318	.603	.773	1415
520.000	979.670	9.246	.10816	5.167	347.56	590.48	650.56	1.74915	.612	.775	1427
540.000	999.670	8.959	.11161	4.932	358.11	604.09	666.09	1.76484	.621	.778	1441
560.000	1019.670	8.694	.11502	4.719	368.73	617.78	681.68	1.78028	.630	.781	1455
580.000	1039.670	8.447	.11839	4.524	379.38	631.57	697.34	1.79548	.639	.785	1469
600.000	1059.670	8.216	.12171	4.346	390.04	645.46	713.07	1.81047	.648	.789	1483
640.000	1099.670	7.798	.12823	4.032	411.27	673.55	744.79	1.83986	.665	.798	1511
680.000	1139.670	7.429	.13461	3.764	432.30	702.11	776.89	1.86853	.682	.808	1539
720.000	1179.670	7.099	.14086	3.532	453.07	731.16	809.41	1.89657	.699	.818	1567
760.000	1219.670	6.803	.14699	3.330	473.53	760.71	842.37	1.92405	.716	.830	1595
800.000	1259.670	6.535	.15302	3.151	493.67	790.79	875.79	1.95101	.732	.841	1621

Table 27. Continued.

ETHANE ISOBAR AT P = 3200 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-290.754	168.916	40.937	.02443	250.900	7029.88	77.34	91.82	.61928	.371	.538	6873
-280.000	179.670	40.554	.02466	238.394	6705.96	83.00	97.61	.65252	.368	.539	6749
-260.000	199.670	39.845	.02510	216.341	6115.44	93.54	108.41	.70952	.362	.541	6501
-240.000	219.670	39.138	.02555	196.201	5558.51	104.09	119.23	.76117	.358	.542	6244
-220.000	239.670	38.432	.02602	178.025	5043.00	114.66	130.07	.80841	.354	.543	5985
-200.000	259.670	37.726	.02651	161.694	4569.57	125.24	140.95	.85198	.351	.545	5728
-180.000	279.670	37.016	.02701	147.025	4135.94	135.86	151.87	.89250	.350	.548	5475
-160.000	299.670	36.303	.02755	133.826	3738.77	146.53	162.86	.93044	.350	.551	5226
-140.000	319.670	35.584	.02810	121.916	3374.56	157.27	173.93	.96620	.350	.556	4983
-120.000	339.670	34.857	.02869	111.132	3040.04	168.10	185.10	1.00010	.351	.562	4745
-100.000	359.670	34.121	.02931	101.329	2732.32	179.03	196.39	1.03241	.353	.568	4512
-80.000	379.670	33.373	.02996	92.383	2448.97	190.07	207.83	1.06335	.356	.576	4285
-60.000	399.670	32.612	.03066	84.187	2187.96	201.25	219.42	1.09311	.359	.584	4062
-40.000	419.670	31.833	.03141	76.650	1947.69	212.59	231.20	1.12186	.362	.594	3845
-20.000	439.670	31.036	.03222	69.697	1726.91	224.09	243.18	1.14974	.367	.604	3631
-.000	459.670	30.218	.03309	63.266	1524.62	235.77	255.38	1.17688	.371	.616	3422
20.000	479.670	29.376	.03404	57.304	1340.10	247.75	267.92	1.20359	.382	.634	3210
40.000	499.670	28.507	.03508	51.773	1172.76	259.96	280.75	1.22978	.388	.649	3012
60.000	519.670	27.609	.03622	46.642	1022.12	272.41	293.87	1.25554	.396	.664	2819
80.000	539.670	26.681	.03748	41.891	887.74	285.12	307.33	1.28094	.404	.681	2634
100.000	559.670	25.722	.03888	37.506	769.13	298.10	321.14	1.30606	.413	.699	2457
120.000	579.670	24.731	.04044	33.479	665.75	311.34	335.30	1.33092	.422	.717	2290
140.000	599.670	23.711	.04217	29.807	576.88	324.95	349.94	1.35737	.445	.750	2120
160.000	619.670	22.666	.04412	26.484	501.75	338.90	365.05	1.38215	.450	.782	1984
180.000	639.670	21.602	.04629	23.505	439.48	352.99	380.42	1.40656	.456	.775	1860
200.000	659.670	20.531	.04871	20.859	389.23	367.19	396.06	1.43063	.464	.788	1749
220.000	679.670	19.464	.05138	18.532	350.16	381.48	411.93	1.45433	.473	.799	1655
240.000	699.670	18.420	.05429	16.507	321.40	395.81	427.98	1.47760	.482	.806	1577
260.000	719.670	17.416	.05742	14.762	301.88	410.10	444.12	1.50036	.491	.808	1517
280.000	739.670	16.468	.06072	13.270	290.27	424.30	460.28	1.52251	.501	.807	1472
300.000	759.670	15.590	.06414	12.001	285.03	438.37	476.38	1.54398	.510	.803	1441
320.000	779.670	14.785	.06764	10.924	284.55	452.30	492.38	1.56477	.520	.797	1421
340.000	799.670	14.053	.07116	10.008	287.40	466.08	508.24	1.58486	.529	.790	1410
360.000	819.670	13.390	.07468	9.224	292.42	479.74	523.99	1.60432	.539	.785	1405
380.000	839.670	12.789	.07819	8.548	298.75	493.31	539.64	1.62318	.548	.780	1404
400.000	859.670	12.243	.08168	7.962	305.78	506.82	555.22	1.64152	.557	.777	1405
420.000	879.670	11.746	.08514	7.448	313.41	520.30	570.75	1.65937	.567	.776	1409
440.000	899.670	11.291	.08857	6.996	321.63	533.77	586.25	1.67680	.576	.775	1415
460.000	919.670	10.874	.09196	6.595	330.39	547.26	601.75	1.69384	.585	.775	1423
480.000	939.670	10.491	.09532	6.239	339.59	560.77	617.25	1.71051	.594	.776	1432
500.000	959.670	10.138	.09864	5.919	349.15	574.33	632.78	1.72686	.604	.777	1443
520.000	979.670	9.812	.10192	5.632	358.99	587.95	648.34	1.74291	.613	.779	1454
540.000	999.670	9.510	.10516	5.372	369.03	601.64	663.95	1.75869	.622	.782	1466
560.000	1019.670	9.229	.10836	5.136	379.21	615.41	679.62	1.77420	.631	.785	1478
580.000	1039.670	8.967	.11152	4.921	389.49	629.27	695.35	1.78948	.640	.788	1491
600.000	1059.670	8.723	.11464	4.725	399.83	643.23	711.16	1.80454	.648	.792	1504
640.000	1099.670	8.279	.12078	4.378	420.58	671.45	743.02	1.83406	.666	.801	1531
680.000	1139.670	7.887	.12680	4.082	441.26	700.13	775.26	1.86286	.683	.811	1556
720.000	1179.670	7.537	.13269	3.827	461.79	729.28	807.91	1.89101	.700	.822	1585
760.000	1219.670	7.222	.13847	3.604	482.10	758.94	840.99	1.91859	.716	.833	1611
800.000	1259.670	6.937	.14416	3.407	502.15	789.10	874.52	1.94564	.732	.844	1637

Table 27. Continued.

Table 27. Continued.

ETHANE ISOBAR AT P = 3500 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-290.179	169.491	40.959	.02441	251.059	7071.87	77.46	93.28	.61993	.371	.538	6891
-280.000	179.670	40.598	.02463	239.277	6768.47	82.80	98.76	.65133	.368	.539	6774
-260.000	199.670	39.894	.02507	217.292	6182.14	93.31	109.56	.70829	.363	.540	6530
-240.000	219.670	39.192	.02552	197.198	5627.73	103.83	120.37	.75990	.358	.541	6276
-220.000	239.670	38.491	.02598	179.057	5113.81	114.36	131.20	.80709	.354	.542	6020
-200.000	259.670	37.791	.02646	162.752	4641.46	124.91	142.06	.85061	.352	.544	5765
-180.000	279.670	37.088	.02696	148.105	4208.61	135.49	152.97	.89107	.350	.547	5515
-160.000	299.670	36.383	.02749	134.927	3812.09	146.12	163.94	.92895	.350	.550	5269
-140.000	319.670	35.672	.02803	123.037	3448.48	156.81	174.98	.96463	.350	.555	5028
-120.000	339.670	34.955	.02861	112.273	3114.50	167.59	186.13	.99845	.352	.560	4793
-100.000	359.670	34.230	.02921	102.493	2807.37	178.46	197.39	1.03066	.354	.566	4564
-80.000	379.670	33.494	.02986	93.573	2524.62	189.44	208.79	1.06149	.356	.573	4340
-60.000	399.670	32.746	.03054	85.407	2264.23	200.54	220.33	1.09113	.359	.581	4121
-40.000	419.670	31.984	.03127	77.905	2024.59	211.79	232.05	1.11974	.363	.590	3907
-20.000	439.670	31.206	.03204	70.991	1804.40	223.19	243.96	1.14745	.367	.600	3698
-.000	459.670	30.410	.03288	64.604	1602.64	234.76	256.08	1.17441	.372	.612	3494
20.000	479.670	29.593	.03379	58.692	1418.53	246.62	268.52	1.20090	.382	.629	3287
40.000	499.670	28.754	.03478	53.215	1251.43	258.68	281.22	1.22684	.389	.642	3094
60.000	519.670	27.892	.03585	48.141	1100.78	270.97	294.20	1.25231	.396	.656	2907
80.000	539.670	27.005	.03703	43.448	966.07	283.48	307.48	1.27739	.404	.672	2727
100.000	559.670	26.093	.03832	39.120	846.75	296.24	321.08	1.30213	.413	.688	2556
120.000	579.670	25.157	.03975	35.145	742.19	309.24	335.00	1.32656	.422	.704	2395
140.000	599.670	24.200	.04132	31.516	651.63	322.57	349.36	1.35253	.445	.734	2231
160.000	619.670	23.224	.04306	28.224	574.24	336.23	364.14	1.37678	.449	.745	2099
180.000	639.670	22.236	.04497	25.259	509.09	350.00	379.15	1.40061	.456	.756	1977
200.000	659.670	21.243	.04708	22.609	455.29	363.87	394.38	1.42407	.464	.768	1868
220.000	679.670	20.253	.04937	20.257	411.95	377.84	409.84	1.44715	.472	.778	1773
240.000	699.670	19.280	.05187	18.187	378.23	391.87	425.49	1.46984	.481	.786	1691
260.000	719.670	18.334	.05454	16.377	353.27	405.92	441.27	1.49208	.491	.792	1624
280.000	739.670	17.429	.05737	14.804	336.10	419.95	457.14	1.51382	.500	.794	1572
300.000	759.670	16.575	.06033	13.445	325.58	433.92	473.02	1.53502	.510	.794	1532
320.000	779.670	15.779	.06338	12.273	320.49	447.82	488.89	1.55563	.520	.792	1504
340.000	799.670	15.044	.06647	11.264	319.60	461.62	504.70	1.57566	.529	.789	1485
360.000	819.670	14.369	.06960	10.392	321.79	475.34	520.44	1.59510	.539	.785	1474
380.000	839.670	13.751	.07272	9.636	326.13	488.99	536.12	1.61400	.548	.782	1468
400.000	859.670	13.185	.07584	8.977	331.90	502.59	551.74	1.63239	.558	.780	1466
420.000	879.670	12.667	.07895	8.399	338.54	516.16	567.33	1.65031	.567	.779	1467
440.000	899.670	12.191	.08203	7.889	345.68	529.73	582.90	1.66781	.577	.778	1470
460.000	919.670	11.753	.08509	7.436	353.30	543.32	598.47	1.68493	.586	.779	1475
480.000	939.670	11.348	.08812	7.031	361.39	556.94	614.05	1.70169	.595	.780	1481
500.000	959.670	10.973	.09113	6.667	369.90	570.60	629.67	1.71813	.604	.782	1488
520.000	979.670	10.626	.09411	6.340	378.78	584.33	645.32	1.73428	.613	.784	1497
540.000	999.670	10.303	.09706	6.044	387.97	598.12	661.02	1.75015	.622	.787	1507
560.000	1019.670	10.002	.09998	5.775	397.40	611.99	676.79	1.76576	.631	.790	1517
580.000	1039.670	9.721	.10287	5.529	407.02	625.95	692.62	1.78113	.640	.793	1528
600.000	1059.670	9.458	.10573	5.305	416.78	640.00	708.52	1.79629	.649	.797	1539
640.000	1099.670	8.980	.11136	4.908	436.58	668.40	740.57	1.82598	.666	.806	1563
680.000	1139.670	8.555	.11689	4.570	456.57	697.24	772.99	1.85493	.683	.815	1588
720.000	1179.670	8.176	.12231	4.278	476.58	726.54	805.81	1.88324	.700	.826	1613
760.000	1219.670	7.835	.12763	4.023	496.51	756.33	839.05	1.91095	.717	.837	1638
800.000	1259.670	7.526	.13287	3.800	516.30	786.62	872.74	1.93812	.733	.848	1663

Table 27. Continued.

ETHANE ISOBAR AT P = 4000 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-289.224	170.446	40.996	.02439	251.335	7141.64	77.66	95.73	.62100	.371	.538	6920
-280.000	179.670	40.672	.02459	240.739	6871.59	82.48	100.69	.64935	.369	.539	6817
-260.000	199.670	39.974	.02502	218.864	6292.49	92.94	111.47	.70626	.363	.540	6578
-240.000	219.670	39.280	.02546	198.845	5742.32	103.41	122.27	.75780	.359	.540	6329
-220.000	239.670	38.588	.02591	180.758	5231.06	113.89	133.09	.80492	.355	.541	6077
-200.000	259.670	37.897	.02639	164.494	4760.48	124.38	143.93	.84836	.353	.543	5827
-180.000	279.670	37.206	.02688	149.882	4328.90	134.90	154.81	.88873	.351	.545	5580
-160.000	299.670	36.512	.02739	136.734	3933.37	145.46	165.74	.92650	.351	.549	5338
-140.000	319.670	35.815	.02792	124.874	3570.62	156.07	176.75	.96207	.351	.553	5102
-120.000	339.670	35.112	.02848	114.141	3237.48	166.76	187.86	.99576	.352	.558	4872
-100.000	359.670	34.404	.02907	104.394	2931.16	177.54	199.07	1.02782	.354	.563	4647
-80.000	379.670	33.687	.02968	95.511	2649.24	188.42	210.40	1.05849	.357	.570	4428
-60.000	399.670	32.961	.03034	87.387	2389.69	199.41	221.88	1.08794	.360	.578	4215
-40.000	419.670	32.224	.03103	79.932	2150.86	210.52	233.51	1.11634	.363	.586	4007
-20.000	439.670	31.474	.03177	73.073	1931.41	221.78	245.31	1.14382	.368	.595	3805
-.000	459.670	30.710	.03256	66.746	1730.27	233.19	257.31	1.17050	.373	.605	3607
20.000	479.670	29.931	.03341	60.901	1546.57	244.86	269.61	1.19668	.383	.621	3407
40.000	499.670	29.135	.03432	55.494	1379.60	256.71	282.14	1.22227	.389	.633	3222
60.000	519.670	28.322	.03531	50.495	1228.72	268.76	294.92	1.24735	.397	.645	3044
80.000	539.670	27.491	.03638	45.876	1093.31	281.02	307.96	1.27198	.405	.659	2872
100.000	559.670	26.643	.03753	41.619	972.73	293.48	321.28	1.29621	.413	.673	2709
120.000	579.670	25.780	.03879	37.708	866.30	306.15	334.88	1.32009	.422	.687	2556
140.000	599.670	24.903	.04016	34.129	773.20	319.13	348.88	1.34544	.445	.715	2398
160.000	619.670	24.016	.04164	30.871	692.58	332.41	363.25	1.36903	.449	.723	2272
180.000	639.670	23.122	.04325	27.921	623.50	345.77	377.81	1.39214	.456	.733	2155
200.000	659.670	22.226	.04499	25.263	565.01	359.24	392.56	1.41485	.463	.743	2048
220.000	679.670	21.335	.04687	22.881	516.21	372.79	407.51	1.43717	.472	.752	1952
240.000	699.670	20.456	.04889	20.757	476.27	386.43	422.64	1.45911	.481	.761	1868
260.000	719.670	19.595	.05103	18.870	444.40	400.13	437.93	1.48067	.490	.768	1796
280.000	739.670	18.760	.05331	17.202	419.84	413.88	453.36	1.50181	.500	.774	1735
300.000	759.670	17.958	.05569	15.732	401.82	427.64	468.89	1.52252	.510	.778	1686
320.000	779.670	17.195	.05816	14.440	389.53	441.40	484.48	1.54278	.519	.781	1647
340.000	799.670	16.476	.06069	13.306	382.10	455.15	500.10	1.56257	.529	.782	1617
360.000	819.670	15.803	.06328	12.311	378.67	468.87	515.74	1.58189	.539	.782	1595
380.000	839.670	15.176	.06590	11.437	378.42	482.58	531.38	1.60074	.548	.782	1580
400.000	859.670	14.593	.06852	10.667	380.60	496.26	547.02	1.61914	.558	.782	1571
420.000	879.670	14.054	.07116	9.987	384.60	509.94	562.65	1.63711	.568	.782	1566
440.000	899.670	13.553	.07378	9.384	389.90	523.63	578.28	1.65469	.577	.782	1564
460.000	919.670	13.090	.07640	8.846	396.10	537.34	593.93	1.67189	.587	.783	1565
480.000	939.670	12.659	.07899	8.365	402.89	551.09	609.60	1.68875	.596	.784	1567
500.000	959.670	12.258	.08158	7.931	410.02	564.88	625.31	1.70529	.605	.787	1571
520.000	979.670	11.884	.08414	7.539	417.48	578.74	641.06	1.72153	.614	.789	1576
540.000	999.670	11.535	.08669	7.184	425.28	592.66	656.87	1.73751	.623	.792	1582
560.000	1019.670	11.208	.08922	6.860	433.40	606.66	672.75	1.75324	.632	.795	1589
580.000	1039.670	10.901	.09173	6.564	441.80	620.75	688.69	1.76872	.641	.799	1597
600.000	1059.670	10.613	.09422	6.293	450.44	634.93	704.72	1.78399	.650	.803	1605
640.000	1099.670	10.086	.09914	5.814	468.33	663.58	737.01	1.81390	.667	.812	1624
680.000	1139.670	9.617	.10398	5.404	486.77	692.65	769.67	1.84307	.684	.821	1645
720.000	1179.670	9.196	.10875	5.050	505.57	722.18	802.72	1.87158	.701	.831	1666
760.000	1219.670	8.815	.11344	4.742	524.55	752.17	836.19	1.89948	.717	.842	1688
800.000	1259.670	8.471	.11806	4.471	543.59	782.65	870.09	1.92683	.733	.853	1711

Table 27. Continued.

ETHANE ISOBAR AT P = 4500 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-288.277	171.393	41.032	.02437	251.626	7211.22	77.86	98.16	.62205	.372	.537	6948
-280.000	179.670	40.744	.02454	242.188	6973.38	82.16	102.61	.64740	.370	.538	6859
-260.000	199.670	40.053	.02497	220.419	6401.65	92.58	113.38	.70426	.364	.539	6626
-240.000	219.670	39.366	.02540	200.472	5855.91	103.00	124.17	.75574	.359	.540	6381
-220.000	239.670	38.683	.02585	182.437	5347.39	113.43	134.97	.80279	.356	.540	6134
-200.000	259.670	38.001	.02632	166.212	4878.57	123.87	145.79	.84616	.353	.542	5887
-180.000	279.670	37.319	.02680	151.630	4448.21	134.32	156.65	.88644	.352	.544	5644
-160.000	299.670	36.637	.02729	138.509	4053.58	144.82	167.56	.92412	.351	.547	5407
-140.000	319.670	35.952	.02781	126.674	3691.58	155.36	178.54	.95958	.352	.551	5174
-120.000	339.670	35.264	.02836	115.967	3359.15	165.97	189.60	.99315	.353	.556	4948
-100.000	359.670	34.571	.02893	106.247	3053.47	176.66	200.77	1.02508	.355	.561	4728
-80.000	379.670	33.872	.02952	97.395	2772.19	187.45	212.05	1.05560	.357	.567	4514
-60.000	399.670	33.165	.03015	89.305	2513.26	198.33	223.46	1.08489	.361	.574	4305
-40.000	419.670	32.450	.03082	81.889	2275.00	209.33	235.01	1.11310	.364	.582	4103
-20.000	439.670	31.725	.03152	75.072	2056.04	220.46	246.73	1.14037	.368	.590	3906
-.000	459.670	30.989	.03227	68.793	1855.26	231.73	258.62	1.16682	.373	.599	3715
20.000	479.670	30.242	.03307	62.998	1671.72	243.24	270.79	1.19274	.384	.614	3521
40.000	499.670	29.482	.03392	57.645	1504.65	254.92	283.18	1.21804	.390	.625	3342
60.000	519.670	28.709	.03483	52.700	1353.32	266.77	295.80	1.24280	.397	.637	3170
80.000	539.670	27.924	.03581	48.136	1217.08	278.81	308.65	1.26707	.405	.649	3005
100.000	559.670	27.127	.03686	43.928	1095.22	291.04	321.76	1.29091	.413	.662	2849
120.000	579.670	26.320	.03799	40.060	987.00	303.46	335.12	1.31436	.422	.674	2702
140.000	599.670	25.505	.03921	36.515	891.63	316.17	348.84	1.33925	.445	.701	2549
160.000	619.670	24.683	.04051	33.278	808.22	329.16	362.91	1.36234	.449	.707	2427
180.000	639.670	23.859	.04191	30.333	735.86	342.22	377.14	1.38494	.456	.716	2314
200.000	659.670	23.036	.04341	27.666	673.61	355.37	391.55	1.40711	.463	.725	2209
220.000	679.670	22.217	.04501	25.259	620.58	368.62	406.13	1.42889	.471	.734	2115
240.000	699.670	21.409	.04671	23.094	575.93	381.97	420.89	1.45029	.480	.742	2030
260.000	719.670	20.615	.04851	21.153	538.89	395.39	435.81	1.47132	.490	.750	1955
280.000	739.670	19.841	.05040	19.417	508.77	408.89	450.89	1.49199	.499	.757	1890
300.000	759.670	19.090	.05238	17.868	484.89	422.45	466.10	1.51227	.509	.763	1835
320.000	779.670	18.368	.05444	16.488	466.64	436.05	481.42	1.53218	.519	.768	1788
340.000	799.670	17.678	.05657	15.260	453.36	449.69	496.82	1.55169	.529	.772	1751
360.000	819.670	17.022	.05875	14.168	444.42	463.35	512.30	1.57081	.539	.775	1721
380.000	839.670	16.403	.06096	13.197	439.16	477.03	527.83	1.58953	.549	.778	1698
400.000	859.670	15.820	.06321	12.333	436.97	490.73	543.41	1.60786	.558	.780	1681
420.000	879.670	15.274	.06547	11.563	437.28	504.46	559.02	1.62581	.568	.781	1669
440.000	899.670	14.762	.06774	10.874	439.56	518.21	574.66	1.64340	.577	.783	1661
460.000	919.670	14.283	.07001	10.257	443.37	532.00	590.34	1.66063	.587	.785	1657
480.000	939.670	13.836	.07228	9.702	448.35	545.84	606.06	1.67755	.596	.787	1655
500.000	959.670	13.417	.07453	9.201	454.18	559.72	621.83	1.69415	.606	.790	1656
520.000	979.670	13.025	.07678	8.748	460.63	573.67	637.65	1.71046	.615	.792	1658
540.000	999.670	12.657	.07901	8.335	467.50	587.69	653.53	1.72651	.624	.796	1661
560.000	1019.670	12.311	.08123	7.959	474.62	601.79	669.48	1.74231	.633	.799	1666
580.000	1039.670	11.985	.08343	7.614	481.97	615.98	685.50	1.75787	.642	.803	1671
600.000	1059.670	11.678	.08563	7.298	489.57	630.25	701.60	1.77321	.651	.807	1677
640.000	1099.670	11.115	.08997	6.737	505.48	659.10	734.07	1.80328	.668	.816	1691
680.000	1139.670	10.609	.09426	6.257	522.18	688.36	766.90	1.83261	.685	.826	1707
720.000	1179.670	10.154	.09849	5.841	539.49	718.07	800.13	1.86127	.702	.836	1725
760.000	1219.670	9.741	.10266	5.479	557.22	748.23	833.78	1.88932	.718	.846	1744
800.000	1259.670	9.365	.10678	5.160	575.24	778.88	867.85	1.91680	.734	.857	1764

Table 27. Continued.

ETHANE ISOBAR AT P = 5000 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DO PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-287.335	172.335	41.068	.02435	251.930	7280.57	78.05	100.60	.62308	.372	.537	6977
-280.000	179.670	40.815	.02450	243.626	7073.77	81.85	104.54	.64548	.370	.538	6900
-260.000	199.670	40.130	.02492	221.959	6509.78	92.23	115.30	.70228	.365	.539	6672
-240.000	219.670	39.451	.02535	202.082	5968.56	102.61	126.07	.75371	.360	.539	6433
-220.000	239.670	38.775	.02579	184.095	5462.81	112.98	136.86	.80070	.356	.540	6189
-200.000	259.670	38.102	.02625	167.906	4995.75	123.36	147.66	.84399	.354	.541	5947
-180.000	279.670	37.430	.02672	153.352	4566.56	133.76	158.50	.88419	.353	.543	5707
-160.000	299.670	36.759	.02720	140.255	4172.79	144.20	169.38	.92179	.352	.546	5473
-140.000	319.670	36.086	.02771	128.441	3811.44	154.68	180.33	.95715	.353	.549	5245
-120.000	339.670	35.410	.02824	117.755	3479.57	165.22	191.36	.99061	.354	.554	5023
-100.000	359.670	34.732	.02879	108.058	3174.43	175.83	202.49	1.02243	.356	.559	4806
-80.000	379.670	34.048	.02937	99.230	2893.61	186.52	213.72	1.05282	.358	.564	4596
-60.000	399.670	33.359	.02998	91.167	2635.13	197.31	225.07	1.08196	.361	.571	4393
-40.000	419.670	32.664	.03061	83.782	2397.26	208.21	236.56	1.11001	.365	.578	4195
-20.000	439.670	31.961	.03129	76.999	2178.59	219.23	248.19	1.13709	.369	.586	4003
-.000	459.670	31.250	.03200	70.756	1977.96	230.37	259.99	1.16334	.374	.594	3817
20.000	479.670	30.530	.03275	65.000	1794.39	241.74	272.06	1.18904	.384	.609	3628
40.000	499.670	29.801	.03356	59.688	1627.03	253.26	284.33	1.21410	.390	.618	3455
60.000	519.670	29.063	.03441	54.784	1475.14	264.95	296.81	1.23858	.398	.629	3289
80.000	539.670	28.316	.03532	50.259	1337.97	276.81	309.51	1.26256	.405	.641	3129
100.000	559.670	27.561	.03628	46.087	1214.81	288.85	322.44	1.28608	.414	.652	2978
120.000	579.670	26.799	.03732	42.248	1104.90	301.06	335.61	1.30920	.423	.664	2836
140.000	599.670	26.032	.03841	38.725	1007.43	313.55	349.11	1.33373	.446	.690	2687
160.000	619.670	25.262	.03959	35.499	921.53	326.31	362.96	1.35644	.450	.695	2569
180.000	639.670	24.492	.04083	32.556	846.31	339.14	376.94	1.37864	.456	.703	2459
200.000	659.670	23.724	.04215	29.878	780.88	352.05	391.08	1.40041	.463	.711	2357
220.000	679.670	22.962	.04355	27.449	724.34	365.07	405.39	1.42177	.471	.720	2263
240.000	699.670	22.210	.04503	25.250	675.87	378.18	419.86	1.44276	.480	.728	2178
260.000	719.670	21.469	.04658	23.265	634.72	391.38	434.51	1.46340	.490	.736	2102
280.000	739.670	20.745	.04821	21.475	600.20	404.68	449.31	1.48368	.499	.744	2035
300.000	759.670	20.039	.04990	19.865	571.69	418.05	464.26	1.50362	.509	.751	1976
320.000	779.670	19.356	.05166	18.417	548.63	431.50	479.34	1.52322	.519	.757	1925
340.000	799.670	18.697	.05348	17.115	530.46	445.02	494.54	1.54247	.529	.763	1882
360.000	819.670	18.066	.05535	15.947	516.69	458.59	509.84	1.56137	.539	.768	1846
380.000	839.670	17.463	.05726	14.898	506.78	472.22	525.23	1.57992	.549	.772	1817
400.000	859.670	16.890	.05921	13.955	500.24	485.89	540.71	1.59814	.558	.776	1794
420.000	879.670	16.347	.06117	13.108	496.59	499.62	556.25	1.61601	.568	.779	1776
440.000	899.670	15.834	.06316	12.344	495.37	513.39	571.86	1.63356	.578	.782	1762
460.000	919.670	15.350	.06515	11.656	496.15	527.22	587.54	1.65079	.587	.785	1753
480.000	939.670	14.894	.06714	11.033	498.57	541.11	603.27	1.66771	.597	.788	1746
500.000	959.670	14.464	.06914	10.469	502.30	555.05	619.06	1.68435	.606	.791	1743
520.000	979.670	14.060	.07113	9.956	507.06	569.07	634.92	1.70070	.615	.795	1741
540.000	999.670	13.678	.07311	9.489	512.61	583.16	650.85	1.71680	.624	.798	1742
560.000	1019.670	13.319	.07508	9.062	518.77	597.34	666.85	1.73265	.633	.802	1744
580.000	1039.670	12.979	.07705	8.670	525.37	611.60	682.93	1.74826	.642	.806	1747
600.000	1059.670	12.658	.07900	8.310	532.28	625.95	699.09	1.76366	.651	.810	1751
640.000	1099.670	12.066	.08288	7.670	546.65	654.95	731.68	1.79384	.669	.819	1761
680.000	1139.670	11.533	.08671	7.120	561.76	684.36	764.64	1.82329	.686	.829	1773
720.000	1179.670	11.050	.09050	6.644	577.56	714.21	798.01	1.85206	.703	.839	1787
760.000	1219.670	10.610	.09425	6.228	593.94	744.53	831.79	1.88022	.719	.850	1803
800.000	1259.670	10.209	.09795	5.861	610.77	775.31	866.00	1.90782	.735	.861	1820

Table 27. Continued.

ETHANE ISOBAR AT P = 5500 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-286.399	173.271	41.104	.02433	252.247	7349.68	78.25	103.03	.62410	.372	.537	7005
-280.000	179.670	40.885	.02446	245.053	7172.81	81.55	106.46	.64358	.371	.537	6940
-260.000	199.670	40.206	.02487	223.486	6616.84	91.89	117.22	.70034	.365	.538	6718
-240.000	219.670	39.534	.02529	203.675	6080.28	102.22	127.98	.75171	.361	.538	6483
-220.000	239.670	38.866	.02573	185.734	5577.38	112.55	138.75	.79864	.357	.539	6244
-200.000	259.670	38.201	.02618	169.578	5112.06	122.88	149.54	.84187	.355	.540	6005
-180.000	279.670	37.538	.02664	155.049	4684.02	133.23	160.36	.88200	.353	.542	5769
-160.000	299.670	36.877	.02712	141.972	4291.02	143.60	171.22	.91951	.353	.544	5539
-140.000	319.670	36.215	.02761	130.177	3930.26	154.02	182.14	.95479	.353	.548	5314
-120.000	339.670	35.552	.02813	119.508	3598.85	164.49	193.13	.98815	.354	.552	5095
-100.000	359.670	34.886	.02866	109.830	3294.11	175.03	204.22	1.01986	.356	.557	4883
-80.000	379.670	34.218	.02922	101.021	3013.64	185.64	215.41	1.05012	.359	.562	4677
-60.000	399.670	33.545	.02981	92.980	2755.46	196.35	226.71	1.07913	.362	.568	4477
-40.000	419.670	32.868	.03043	85.618	2517.81	207.15	238.13	1.10703	.365	.575	4283
-20.000	439.670	32.185	.03107	78.861	2299.28	218.06	249.70	1.13396	.370	.582	4096
-.000	459.670	31.495	.03175	72.647	2098.64	229.09	261.42	1.16003	.374	.590	3915
20.000	479.670	30.800	.03247	66.921	1914.89	240.34	273.40	1.18554	.385	.604	3731
40.000	499.670	30.098	.03323	61.640	1747.13	251.73	285.57	1.21038	.391	.613	3562
60.000	519.670	29.389	.03403	56.766	1594.56	263.28	297.93	1.23464	.398	.623	3400
80.000	539.670	28.674	.03488	52.269	1456.43	274.98	310.50	1.25837	.406	.634	3246
100.000	559.670	27.953	.03577	48.122	1331.98	286.85	323.29	1.28164	.414	.645	3099
120.000	579.670	27.229	.03673	44.304	1220.44	298.89	336.29	1.30447	.423	.656	2960
140.000	599.670	26.502	.03773	40.794	1121.00	311.20	349.63	1.32871	.446	.681	2815
160.000	619.670	25.774	.03880	37.574	1032.83	323.78	363.29	1.35112	.450	.686	2701
180.000	639.670	25.048	.03992	34.628	955.06	336.41	377.08	1.37301	.456	.693	2593
200.000	659.670	24.325	.04111	31.938	886.81	349.14	391.01	1.39446	.463	.701	2493
220.000	679.670	23.608	.04236	29.488	827.23	361.96	405.10	1.41550	.471	.709	2400
240.000	699.670	22.900	.04367	27.259	775.51	374.88	419.36	1.43617	.480	.717	2316
260.000	719.670	22.203	.04504	25.237	730.92	387.91	433.78	1.45650	.490	.725	2239
280.000	739.670	21.519	.04647	23.403	692.77	401.03	448.36	1.47648	.499	.733	2170
300.000	759.670	20.852	.04796	21.742	660.46	414.25	463.09	1.49614	.509	.740	2110
320.000	779.670	20.203	.04950	20.238	633.44	427.56	477.97	1.51547	.519	.748	2056
340.000	799.670	19.575	.05109	18.877	611.22	440.96	492.99	1.53449	.529	.754	2009
360.000	819.670	18.968	.05272	17.646	593.34	454.44	508.13	1.55319	.539	.760	1969
380.000	839.670	18.386	.05439	16.532	579.37	467.99	523.39	1.57158	.549	.766	1935
400.000	859.670	17.827	.05609	15.524	568.87	481.62	538.75	1.58966	.558	.771	1907
420.000	879.670	17.294	.05782	14.611	561.45	495.32	554.21	1.60743	.568	.775	1883
440.000	899.670	16.786	.05957	13.783	556.71	509.08	569.76	1.62491	.578	.780	1865
460.000	919.670	16.304	.06134	13.032	554.28	522.92	585.39	1.64210	.587	.784	1850
480.000	939.670	15.846	.06311	12.349	553.83	536.83	601.10	1.65900	.597	.788	1840
500.000	959.670	15.412	.06489	11.727	555.03	550.81	616.90	1.67563	.606	.792	1832
520.000	979.670	15.000	.06667	11.159	557.61	564.88	632.77	1.69200	.616	.796	1827
540.000	999.670	14.611	.06844	10.640	561.31	579.02	648.72	1.70812	.625	.800	1824
560.000	1019.670	14.242	.07022	10.163	565.93	593.25	664.76	1.72400	.634	.804	1823
580.000	1039.670	13.892	.07198	9.726	571.27	607.56	680.88	1.73966	.643	.808	1823
600.000	1059.670	13.560	.07375	9.323	577.18	621.98	697.08	1.75510	.652	.812	1825
640.000	1099.670	12.946	.07724	8.606	590.23	651.10	729.76	1.78537	.669	.822	1832
680.000	1139.670	12.391	.08070	7.989	604.24	680.63	762.83	1.81490	.686	.832	1841
720.000	1179.670	11.886	.08413	7.453	618.80	710.61	796.29	1.84376	.703	.842	1852
760.000	1219.670	11.425	.08753	6.984	633.92	741.04	830.18	1.87201	.719	.853	1865
800.000	1259.670	11.003	.09088	6.570	649.57	771.94	864.50	1.89970	.735	.864	1879

Table 27. Continued.

ETHANE ISOBAR AT P = 6000 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-285.469	174.201	41.140	.02431	252.577	7418.53	78.44	105.45	.62510	.373	.537	7034
-280.000	179.670	40.955	.02442	246.469	7270.46	81.26	108.39	.64169	.371	.537	6980
-260.000	199.670	40.281	.02483	224.999	6722.82	91.55	119.13	.69841	.366	.538	6763
-240.000	219.670	39.615	.02524	205.251	6191.07	101.84	129.89	.74974	.361	.538	6533
-220.000	239.670	38.955	.02567	187.354	5691.03	112.12	140.65	.79661	.358	.538	6297
-200.000	259.670	38.298	.02611	171.228	5227.52	122.41	151.42	.83978	.355	.539	6062
-180.000	279.670	37.644	.02656	156.722	4800.60	132.70	162.22	.87984	.354	.541	5830
-160.000	299.670	36.992	.02703	143.663	4408.35	143.02	173.06	.91728	.353	.543	5603
-140.000	319.670	36.340	.02752	131.883	4048.10	153.38	183.95	.95248	.354	.546	5381
-120.000	339.670	35.688	.02802	121.229	3717.06	163.79	194.92	.98575	.355	.550	5166
-100.000	359.670	35.035	.02854	111.564	3412.61	174.26	205.97	1.01736	.357	.555	4957
-80.000	379.670	34.380	.02909	102.771	3132.40	184.80	217.11	1.04751	.359	.560	4755
-60.000	399.670	33.723	.02965	94.746	2874.38	195.42	228.37	1.07640	.362	.566	4559
-40.000	419.670	33.062	.03025	87.403	2636.83	206.14	239.74	1.10417	.366	.572	4369
-20.000	439.670	32.397	.03087	80.667	2418.30	216.96	251.25	1.13096	.370	.579	4186
-.000	459.670	31.727	.03152	74.474	2217.53	227.88	262.90	1.15687	.375	.586	4008
20.000	479.670	31.053	.03220	68.771	2033.48	239.02	274.80	1.18221	.385	.599	3828
40.000	499.670	30.374	.03292	63.512	1865.22	250.30	286.88	1.20687	.391	.608	3664
60.000	519.670	29.691	.03368	58.661	1711.92	261.72	299.14	1.23093	.399	.618	3506
80.000	539.670	29.004	.03448	54.184	1572.78	273.29	311.60	1.25446	.406	.628	3356
100.000	559.670	28.313	.03532	50.055	1447.05	285.02	324.27	1.27750	.415	.639	3212
120.000	579.670	27.621	.03620	46.249	1333.94	296.91	337.14	1.30011	.423	.649	3078
140.000	599.670	26.927	.03714	42.747	1232.66	309.07	350.33	1.32410	.446	.673	2935
160.000	619.670	26.234	.03812	39.529	1142.38	321.49	363.84	1.34626	.450	.678	2823
180.000	639.670	25.544	.03915	36.577	1062.27	333.97	377.47	1.36790	.456	.685	2718
200.000	659.670	24.858	.04023	33.874	991.48	346.54	391.23	1.38909	.463	.692	2619
220.000	679.670	24.178	.04136	31.403	929.19	359.20	405.15	1.40987	.471	.700	2528
240.000	699.670	23.506	.04254	29.148	874.62	371.97	419.23	1.43029	.480	.708	2444
260.000	719.670	22.845	.04377	27.092	827.03	384.84	433.47	1.45036	.490	.716	2367
280.000	739.670	22.197	.04505	25.220	785.76	397.82	447.88	1.47010	.499	.724	2298
300.000	759.670	21.562	.04638	23.515	750.22	410.91	462.44	1.48953	.509	.732	2235
320.000	779.670	20.943	.04775	21.964	719.86	424.10	477.15	1.50864	.519	.739	2180
340.000	799.670	20.342	.04916	20.553	694.21	437.39	492.01	1.52746	.529	.746	2130
360.000	819.670	19.760	.05061	19.269	672.84	450.78	507.01	1.54598	.539	.753	2087
380.000	839.670	19.197	.05209	18.101	655.35	464.26	522.13	1.56422	.549	.760	2050
400.000	859.670	18.655	.05361	17.037	641.37	477.83	537.38	1.58216	.558	.765	2018
420.000	879.670	18.134	.05514	16.068	630.53	491.48	552.75	1.59983	.568	.771	1990
440.000	899.670	17.636	.05670	15.184	622.51	505.22	568.22	1.61723	.578	.776	1968
460.000	919.670	17.159	.05828	14.377	616.97	519.05	583.80	1.63435	.588	.781	1949
480.000	939.670	16.704	.05987	13.640	613.62	532.96	599.48	1.65121	.597	.786	1934
500.000	959.670	16.269	.06146	12.966	612.17	546.96	615.25	1.66782	.607	.791	1923
520.000	979.670	15.856	.06307	12.348	612.34	561.04	631.11	1.68418	.616	.796	1914
540.000	999.670	15.463	.06467	11.781	613.90	575.21	647.07	1.70031	.625	.800	1908
560.000	1019.670	15.088	.06628	11.259	616.64	589.48	663.12	1.71620	.634	.805	1903
580.000	1039.670	14.732	.06788	10.778	620.35	603.84	679.26	1.73188	.643	.809	1901
600.000	1059.670	14.393	.06948	10.334	624.88	618.30	695.49	1.74735	.652	.814	1900
640.000	1099.670	13.763	.07266	9.543	635.78	647.52	728.24	1.77769	.670	.824	1903
680.000	1139.670	13.190	.07582	8.860	648.42	677.15	761.39	1.80729	.687	.834	1909
720.000	1179.670	12.667	.07894	8.266	662.11	707.23	794.94	1.83623	.704	.844	1918
760.000	1219.670	12.189	.08204	7.745	676.30	737.77	828.92	1.86455	.720	.855	1928
800.000	1259.670	11.749	.08511	7.285	690.94	768.77	863.33	1.89231	.736	.866	1940

Table 27. Continued.

ETHANE ISOBAR AT P = 6500 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-284.545	175.125	41.176	.02429	252.920	7487.12	78.64	107.87	.62608	.373	.536	7062
-280.000	179.670	41.023	.02438	247.876	7366.69	80.97	110.31	.63983	.372	.537	7018
-260.000	199.670	40.355	.02478	226.499	6827.72	91.22	121.05	.69651	.367	.537	6808
-240.000	219.670	39.695	.02519	206.812	6300.93	101.47	131.79	.74780	.362	.537	6582
-220.000	239.670	39.042	.02561	188.955	5803.86	111.71	142.54	.79462	.358	.538	6350
-200.000	259.670	38.392	.02605	172.858	5342.15	121.95	153.30	.83773	.356	.538	6118
-180.000	279.670	37.747	.02649	158.372	4916.35	132.20	164.08	.87773	.354	.540	5890
-160.000	299.670	37.104	.02695	145.328	4524.81	142.46	174.90	.91510	.354	.542	5666
-140.000	319.670	36.462	.02743	133.561	4165.01	152.76	185.77	.95022	.354	.545	5447
-120.000	339.670	35.821	.02792	122.918	3834.28	163.11	196.71	.98341	.356	.549	5235
-100.000	359.670	35.179	.02843	113.265	3530.03	173.52	207.73	1.01492	.358	.553	5030
-80.000	379.670	34.537	.02895	104.483	3249.96	183.99	218.84	1.04498	.360	.558	4831
-60.000	399.670	33.893	.02950	96.472	2992.02	194.54	230.05	1.07376	.363	.563	4638
-40.000	419.670	33.247	.03008	89.142	2754.48	205.17	241.38	1.10141	.367	.569	4452
-20.000	439.670	32.598	.03068	82.421	2535.81	215.91	252.83	1.12807	.371	.576	4272
-.000	459.670	31.947	.03130	76.244	2334.81	226.74	264.42	1.15385	.376	.583	4098
20.000	479.670	31.292	.03196	70.557	2150.37	237.78	276.25	1.17904	.386	.596	3922
40.000	499.670	30.634	.03264	65.316	1981.54	248.96	288.25	1.20354	.392	.604	3762
60.000	519.670	29.974	.03336	60.480	1827.44	260.27	300.42	1.22743	.399	.613	3607
80.000	539.670	29.311	.03412	56.017	1687.29	271.72	312.79	1.25078	.407	.623	3460
100.000	559.670	28.646	.03491	51.900	1560.29	283.33	325.35	1.27363	.415	.633	3320
120.000	579.670	27.981	.03574	48.102	1445.67	295.10	338.11	1.29604	.424	.643	3188
140.000	599.670	27.316	.03661	44.603	1342.63	307.12	351.19	1.31983	.447	.667	3048
160.000	619.670	26.652	.03752	41.383	1250.38	319.41	364.57	1.34178	.450	.672	2939
180.000	639.670	25.992	.03847	38.423	1168.10	331.75	378.06	1.36321	.456	.678	2835
200.000	659.670	25.337	.03947	35.707	1094.98	344.18	391.68	1.38418	.463	.685	2738
220.000	679.670	24.688	.04050	33.216	1030.23	356.71	405.46	1.40476	.472	.693	2647
240.000	699.670	24.048	.04158	30.936	973.08	369.35	419.40	1.42496	.480	.701	2564
260.000	719.670	23.417	.04270	28.850	922.82	382.09	433.49	1.44483	.490	.709	2487
280.000	739.670	22.798	.04386	26.943	878.79	394.95	447.75	1.46437	.499	.717	2418
300.000	759.670	22.191	.04506	25.200	840.42	407.93	462.17	1.48360	.509	.725	2354
320.000	779.670	21.599	.04630	23.608	807.16	421.01	476.74	1.50253	.519	.732	2297
340.000	799.670	21.022	.04757	22.153	778.55	434.21	491.46	1.52118	.529	.740	2246
360.000	819.670	20.461	.04887	20.823	754.16	447.51	506.33	1.53955	.539	.747	2201
380.000	839.670	19.918	.05021	19.607	733.62	460.91	521.34	1.55764	.549	.754	2161
400.000	859.670	19.392	.05157	18.494	716.58	474.42	536.49	1.57547	.559	.761	2126
420.000	879.670	18.885	.05295	17.476	702.71	488.03	551.76	1.59303	.568	.767	2095
440.000	899.670	18.398	.05435	16.543	691.71	501.74	567.16	1.61034	.578	.773	2069
460.000	919.670	17.929	.05578	15.688	683.29	515.54	582.67	1.62739	.588	.779	2047
480.000	939.670	17.479	.05721	14.903	677.18	529.44	598.30	1.64420	.597	.784	2029
500.000	959.670	17.048	.05866	14.182	673.11	543.44	614.04	1.66077	.607	.789	2014
520.000	979.670	16.636	.06011	13.519	670.86	557.53	629.88	1.67711	.616	.795	2002
540.000	999.670	16.242	.06157	12.907	670.18	571.72	645.82	1.69322	.625	.800	1992
560.000	1019.670	15.866	.06303	12.343	670.88	586.01	661.87	1.70912	.635	.805	1985
580.000	1039.670	15.506	.06449	11.822	672.75	600.40	678.02	1.72480	.644	.810	1980
600.000	1059.670	15.163	.06595	11.340	675.64	614.88	694.27	1.74028	.653	.815	1977
640.000	1099.670	14.521	.06887	10.477	683.86	644.18	727.07	1.77066	.670	.825	1975
680.000	1139.670	13.935	.07176	9.730	694.49	673.90	760.27	1.80032	.687	.835	1977
720.000	1179.670	13.398	.07464	9.079	706.77	704.06	793.90	1.82932	.704	.846	1983
760.000	1219.670	12.905	.07749	8.507	720.12	734.68	827.95	1.85771	.720	.857	1991
800.000	1259.670	12.452	.08031	8.001	734.07	765.77	862.44	1.88553	.736	.868	2001

Table 27. Continued.

ETHANE ISOBAR AT P = 7000 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-283.627	176.043	41.212	.02426	253.274	7555.43	78.84	110.29	.62705	.373	.536	7091
-280.000	179.670	41.090	.02434	249.274	7461.47	80.69	112.24	.63799	.372	.536	7057
-260.000	199.670	40.428	.02474	227.987	6931.49	90.91	122.97	.69464	.367	.537	6852
-240.000	219.670	39.774	.02514	208.359	6409.88	101.11	133.70	.74588	.363	.537	6630
-220.000	239.670	39.127	.02556	190.540	5915.85	111.31	144.44	.79266	.359	.537	6402
-200.000	259.670	38.485	.02598	174.469	5456.00	121.50	155.19	.83572	.357	.538	6174
-180.000	279.670	37.847	.02642	160.001	5031.30	131.70	165.95	.87566	.355	.539	5948
-160.000	299.670	37.213	.02687	146.970	4640.43	141.92	176.75	.91296	.355	.541	5727
-140.000	319.670	36.580	.02734	135.213	4281.04	152.17	187.60	.94801	.355	.544	5512
-120.000	339.670	35.949	.02782	124.579	3950.55	162.46	198.52	.98112	.356	.547	5303
-100.000	359.670	35.319	.02831	114.934	3646.44	172.80	209.50	1.01255	.358	.552	5100
-80.000	379.670	34.688	.02883	106.161	3366.42	183.21	220.58	1.04252	.361	.556	4904
-60.000	399.670	34.057	.02936	98.158	3108.46	193.69	231.75	1.07120	.364	.561	4715
-40.000	419.670	33.425	.02992	90.839	2870.81	204.26	243.04	1.09875	.367	.567	4532
-20.000	439.670	32.791	.03050	84.129	2651.97	214.91	254.44	1.12529	.371	.573	4355
-.000	459.670	32.156	.03110	77.963	2450.65	225.66	265.97	1.15094	.376	.580	4185
20.000	479.670	31.519	.03173	72.288	2265.75	236.62	277.74	1.17600	.386	.593	4012
40.000	499.670	30.880	.03238	67.058	2096.27	247.69	289.67	1.20036	.392	.601	3855
60.000	519.670	30.239	.03307	62.233	1941.36	258.90	301.77	1.22410	.399	.609	3704
80.000	539.670	29.598	.03379	57.780	1800.17	270.26	314.05	1.24729	.407	.619	3559
100.000	559.670	28.956	.03454	53.669	1671.93	281.76	326.52	1.26999	.416	.628	3422
120.000	579.670	28.314	.03532	49.875	1555.84	293.41	339.19	1.29222	.424	.638	3293
140.000	599.670	27.674	.03614	46.376	1451.13	305.32	352.16	1.31584	.447	.662	3155
160.000	619.670	27.036	.03699	43.151	1357.02	317.49	365.43	1.33762	.451	.666	3048
180.000	639.670	26.402	.03788	40.182	1272.71	329.72	378.81	1.35886	.456	.672	2946
200.000	659.670	25.774	.03880	37.451	1197.42	342.03	392.32	1.37966	.464	.679	2850
220.000	679.670	25.152	.03976	34.942	1130.39	354.44	405.98	1.40005	.472	.687	2760
240.000	699.670	24.538	.04075	32.638	1070.87	366.97	419.79	1.42008	.481	.695	2677
260.000	719.670	23.933	.04178	30.524	1018.17	379.60	433.76	1.43977	.490	.703	2601
280.000	739.670	23.339	.04285	28.586	971.66	392.36	447.90	1.45914	.499	.711	2531
300.000	759.670	22.757	.04394	26.809	930.75	405.23	462.19	1.47821	.509	.719	2467
320.000	779.670	22.187	.04507	25.179	894.91	418.23	476.65	1.49699	.519	.727	2409
340.000	799.670	21.631	.04623	23.685	863.67	431.33	491.26	1.51549	.529	.734	2357
360.000	819.670	21.090	.04741	22.314	836.63	444.56	506.02	1.53373	.539	.742	2310
380.000	839.670	20.565	.04863	21.056	813.41	457.90	520.93	1.55170	.549	.749	2268
400.000	859.670	20.055	.04986	19.900	793.67	471.35	535.98	1.56941	.559	.756	2230
420.000	879.670	19.562	.05112	18.839	777.11	484.91	551.17	1.58688	.568	.763	2198
440.000	899.670	19.086	.05240	17.862	763.44	498.57	566.49	1.60410	.578	.769	2169
460.000	919.670	18.626	.05369	16.964	752.39	512.35	581.94	1.62109	.588	.776	2144
480.000	939.670	18.184	.05499	16.136	743.72	526.23	597.51	1.63784	.597	.782	2123
500.000	959.670	17.758	.05631	15.372	737.20	540.21	613.21	1.65436	.607	.788	2105
520.000	979.670	17.350	.05764	14.668	732.59	554.30	629.02	1.67067	.616	.793	2090
540.000	999.670	16.957	.05897	14.016	729.70	568.50	644.94	1.68676	.626	.799	2077
560.000	1019.670	16.581	.06031	13.413	728.33	582.80	660.97	1.70264	.635	.804	2067
580.000	1039.670	16.220	.06165	12.855	728.29	597.20	677.11	1.71832	.644	.810	2060
600.000	1059.670	15.875	.06299	12.336	729.42	611.71	693.37	1.73380	.653	.815	2054
640.000	1099.670	15.226	.06568	11.406	734.61	641.06	726.19	1.76420	.670	.826	2047
680.000	1139.670	14.631	.06835	10.598	742.84	670.85	759.44	1.79390	.688	.837	2046
720.000	1179.670	14.083	.07101	9.891	753.27	701.08	793.12	1.82295	.704	.847	2049
760.000	1219.670	13.579	.07364	9.269	765.25	731.78	827.24	1.85139	.721	.858	2054
800.000	1259.670	13.113	.07626	8.719	778.28	762.94	861.79	1.87926	.737	.869	2062

Table 27. Continued.

ETHANE ISOBAR AT P = 7500 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-282.714	176.956	41.247	.02424	253.639	7623.47	79.03	112.70	.62801	.374	.536	7119
-280.000	179.670	41.157	.02430	250.664	7554.78	80.42	114.16	.63617	.373	.536	7094
-260.000	199.670	40.499	.02469	229.464	7034.19	90.59	124.89	.69279	.368	.536	6895
-240.000	219.670	39.851	.02509	209.891	6517.93	100.76	135.61	.74399	.363	.536	6677
-220.000	239.670	39.211	.02550	192.109	6027.05	110.92	146.34	.79072	.360	.536	6453
-200.000	259.670	38.576	.02592	176.061	5569.04	121.07	157.07	.83373	.357	.537	6228
-180.000	279.670	37.946	.02635	161.609	5145.47	131.22	167.82	.87362	.356	.538	6006
-160.000	299.670	37.319	.02680	148.590	4755.25	141.39	178.61	.91086	.355	.540	5788
-140.000	319.670	36.695	.02725	136.840	4396.23	151.59	189.44	.94585	.356	.543	5575
-120.000	339.670	36.074	.02772	126.213	4065.94	161.83	200.33	.97889	.357	.546	5369
-100.000	359.670	35.454	.02821	116.573	3761.90	172.12	211.29	1.01024	.359	.550	5170
-80.000	379.670	34.834	.02871	107.806	3481.86	182.47	222.33	1.04013	.361	.555	4977
-60.000	399.670	34.215	.02923	99.809	3223.81	192.88	233.47	1.06872	.364	.559	4790
-40.000	419.670	33.596	.02977	92.497	2985.98	203.38	244.72	1.09617	.368	.565	4610
-20.000	439.670	32.976	.03033	85.793	2766.86	213.96	256.07	1.12260	.372	.571	4436
-.000	459.670	32.355	.03091	79.636	2565.16	224.63	267.56	1.14815	.377	.578	4269
20.000	479.670	31.734	.03151	73.969	2379.73	235.51	279.27	1.17309	.387	.590	4099
40.000	499.670	31.112	.03214	68.746	2209.59	246.50	291.14	1.19732	.393	.597	3945
60.000	519.670	30.490	.03280	63.928	2053.82	257.62	303.17	1.22093	.400	.606	3796
80.000	539.670	29.867	.03348	59.480	1911.60	268.88	315.38	1.24398	.408	.615	3655
100.000	559.670	29.245	.03419	55.372	1782.12	280.28	327.77	1.26653	.416	.624	3520
120.000	579.670	28.625	.03494	51.578	1664.61	291.84	340.36	1.28862	.424	.634	3393
140.000	599.670	28.006	.03571	48.076	1558.30	303.65	353.24	1.31209	.447	.657	3257
160.000	619.670	27.391	.03651	44.845	1462.42	315.72	366.42	1.33371	.451	.661	3152
180.000	639.670	26.780	.03734	41.866	1376.20	327.84	379.70	1.35481	.457	.667	3051
200.000	659.670	26.174	.03821	39.120	1298.88	340.05	393.11	1.37545	.464	.674	2956
220.000	679.670	25.576	.03910	36.592	1229.72	352.36	406.66	1.39569	.472	.682	2868
240.000	699.670	24.985	.04002	34.266	1168.00	364.79	420.37	1.41557	.481	.689	2785
260.000	719.670	24.402	.04098	32.126	1113.06	377.33	434.24	1.43511	.490	.697	2709
280.000	739.670	23.830	.04196	30.159	1064.25	389.99	448.27	1.45434	.499	.706	2639
300.000	759.670	23.269	.04298	28.350	1021.02	402.78	462.46	1.47327	.509	.714	2574
320.000	779.670	22.720	.04401	26.686	982.84	415.69	476.81	1.49192	.519	.722	2516
340.000	799.670	22.183	.04508	25.156	949.25	428.72	491.33	1.51029	.529	.730	2462
360.000	819.670	21.660	.04617	23.748	919.83	441.87	505.99	1.52841	.539	.737	2414
380.000	839.670	21.151	.04728	22.452	894.21	455.15	520.81	1.54627	.549	.745	2371
400.000	859.670	20.656	.04841	21.258	872.06	468.54	535.78	1.56389	.559	.752	2332
420.000	879.670	20.176	.04956	20.157	853.09	482.06	550.89	1.58127	.569	.759	2297
440.000	899.670	19.711	.05073	19.142	837.01	495.68	566.14	1.59841	.578	.766	2266
460.000	919.670	19.261	.05192	18.204	823.59	509.43	581.53	1.61533	.589	.773	2239
480.000	939.670	18.827	.05312	17.337	812.58	523.28	597.05	1.63202	.598	.779	2215
500.000	959.670	18.408	.05432	16.536	803.78	537.25	612.70	1.64850	.607	.786	2195
520.000	979.670	18.004	.05554	15.793	796.96	551.33	628.47	1.66476	.617	.792	2177
540.000	999.670	17.615	.05677	15.105	791.95	565.52	644.36	1.68083	.626	.798	2162
560.000	1019.670	17.241	.05800	14.467	788.56	579.82	660.38	1.69669	.635	.804	2150
580.000	1039.670	16.881	.05924	13.873	786.62	594.24	676.51	1.71235	.644	.809	2140
600.000	1059.670	16.535	.06048	13.321	785.97	608.76	692.75	1.72783	.653	.815	2131
640.000	1099.670	15.884	.06296	12.327	787.97	638.14	725.58	1.75824	.671	.826	2120
680.000	1139.670	15.282	.06544	11.461	793.53	667.98	758.86	1.78796	.688	.837	2115
720.000	1179.670	14.727	.06790	10.701	801.80	698.27	792.58	1.81704	.705	.849	2114
760.000	1219.670	14.213	.07036	10.030	812.07	729.03	826.74	1.84552	.721	.860	2117
800.000	1259.670	13.737	.07279	9.436	823.79	760.26	861.35	1.87344	.737	.871	2123

Table 27. Continued.

ETHANE ISOBAR AT P = 8000 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-281.807	177.863	41.282	.02422	254.015	7691.20	79.23	115.11	.62895	.374	.536	7147
-280.000	179.670	41.223	.02426	252.046	7646.59	80.15	116.08	.63436	.373	.536	7131
-260.000	199.670	40.570	.02465	230.929	7135.79	90.29	126.80	.69096	.368	.536	6937
-240.000	219.670	39.927	.02505	211.410	6625.08	100.42	137.53	.74213	.364	.536	6724
-220.000	239.670	39.293	.02545	193.661	6137.41	110.54	148.24	.78882	.360	.536	6504
-200.000	259.670	38.665	.02586	177.636	5681.33	120.65	158.96	.83178	.358	.536	6282
-180.000	279.670	38.042	.02629	163.199	5258.92	130.76	169.70	.87162	.356	.538	6062
-160.000	299.670	37.423	.02672	150.188	4869.31	140.88	180.47	.90880	.356	.539	5847
-140.000	319.670	36.808	.02717	138.444	4510.63	151.03	191.28	.94373	.356	.542	5638
-120.000	339.670	36.195	.02763	127.821	4180.48	161.22	202.15	.97670	.357	.545	5434
-100.000	359.670	35.585	.02810	118.185	3876.46	171.46	213.09	1.00799	.359	.549	5237
-80.000	379.670	34.975	.02859	109.421	3596.35	181.75	224.10	1.03779	.362	.553	5047
-60.000	399.670	34.367	.02910	101.428	3338.13	192.10	235.21	1.06630	.365	.558	4863
-40.000	419.670	33.760	.02962	94.119	3100.06	202.53	246.41	1.09366	.368	.563	4686
-20.000	439.670	33.153	.03016	87.420	2880.61	213.05	257.73	1.12001	.372	.569	4515
-.000	459.670	32.546	.03073	81.266	2678.46	223.65	269.17	1.14545	.377	.575	4350
20.000	479.670	31.939	.03131	75.604	2492.47	234.45	280.83	1.17028	.387	.587	4183
40.000	499.670	31.333	.03192	70.385	2321.61	245.37	292.65	1.19441	.393	.594	4031
60.000	519.670	30.727	.03255	65.570	2164.98	256.41	304.62	1.21790	.400	.603	3885
80.000	539.670	30.121	.03320	61.124	2021.72	267.58	316.76	1.24083	.408	.612	3746
100.000	559.670	29.518	.03388	57.016	1891.03	278.90	329.09	1.26325	.416	.621	3614
120.000	579.670	28.916	.03458	53.221	1772.14	290.36	341.60	1.28521	.425	.630	3489
140.000	599.670	28.317	.03532	49.714	1664.29	302.08	354.40	1.30855	.448	.653	3354
160.000	619.670	27.721	.03607	46.474	1566.72	314.06	367.50	1.33004	.451	.657	3251
180.000	639.670	27.130	.03686	43.483	1478.68	326.09	380.70	1.35099	.457	.663	3152
200.000	659.670	26.545	.03767	40.723	1399.44	338.21	394.02	1.37150	.464	.670	3058
220.000	679.670	25.967	.03851	38.177	1328.27	350.44	407.49	1.39161	.472	.677	2970
240.000	699.670	25.396	.03938	35.829	1264.50	362.77	421.10	1.41136	.481	.685	2888
260.000	719.670	24.834	.04027	33.664	1207.45	375.23	434.88	1.43078	.490	.693	2812
280.000	739.670	24.281	.04118	31.670	1156.52	387.81	448.82	1.44988	.500	.701	2742
300.000	759.670	23.739	.04213	29.831	1111.14	400.52	462.93	1.46869	.509	.709	2677
320.000	779.670	23.207	.04309	28.136	1070.80	413.36	477.19	1.48723	.519	.717	2618
340.000	799.670	22.688	.04408	26.573	1035.05	426.32	491.62	1.50550	.529	.725	2564
360.000	819.670	22.180	.04508	25.132	1003.45	439.41	506.20	1.52351	.539	.733	2514
380.000	839.670	21.686	.04611	23.801	975.66	452.63	520.94	1.54128	.549	.741	2470
400.000	859.670	21.205	.04716	22.571	951.33	465.97	535.83	1.55881	.559	.748	2429
420.000	879.670	20.737	.04822	21.435	930.18	479.44	550.87	1.57610	.569	.756	2393
440.000	899.670	20.283	.04930	20.384	911.94	493.03	566.06	1.59318	.578	.763	2360
460.000	919.670	19.843	.05040	19.410	896.36	506.74	581.39	1.61003	.588	.770	2331
480.000	939.670	19.417	.05150	18.508	883.21	520.57	596.86	1.62667	.598	.777	2305
500.000	959.670	19.005	.05262	17.672	872.31	534.51	612.46	1.64310	.607	.783	2283
520.000	979.670	18.607	.05374	16.895	863.44	548.58	628.20	1.65932	.617	.790	2263
540.000	999.670	18.222	.05488	16.173	856.43	562.76	644.06	1.67535	.626	.796	2246
560.000	1019.670	17.851	.05602	15.501	851.12	577.06	660.05	1.69119	.635	.803	2231
580.000	1039.670	17.493	.05716	14.876	847.34	591.48	676.16	1.70684	.644	.809	2219
600.000	1059.670	17.149	.05831	14.292	844.94	606.01	692.39	1.72230	.653	.815	2209
640.000	1099.670	16.497	.06062	13.239	843.73	635.41	725.21	1.75270	.671	.826	2194
680.000	1139.670	15.892	.06292	12.317	846.51	665.28	758.50	1.78243	.688	.838	2185
720.000	1179.670	15.332	.06522	11.506	852.40	695.62	792.25	1.81154	.705	.849	2181
760.000	1219.670	14.811	.06752	10.789	860.72	726.43	826.45	1.84005	.722	.861	2181
800.000	1259.670	14.328	.06979	10.152	870.87	757.71	861.10	1.86801	.738	.872	2184

Table 27. Continued.

ETHANE ISOBAR AT P = 8500 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-280.905	178.765	41.317	.02420	254.402	7758.63	79.43	117.52	.62987	.374	.536	7175
-280.000	179.670	41.288	.02422	253.421	7736.85	79.88	118.01	.63258	.374	.536	7167
-260.000	199.670	40.639	.02461	232.385	7236.27	89.99	128.72	.68915	.369	.536	6979
-240.000	219.670	40.002	.02500	212.916	6731.34	100.09	139.44	.74029	.364	.536	6770
-220.000	239.670	39.374	.02540	195.199	6246.99	110.17	150.15	.78694	.361	.535	6553
-200.000	259.670	38.752	.02581	179.194	5792.88	120.24	160.86	.82986	.358	.536	6335
-180.000	279.670	38.136	.02622	164.769	5371.59	130.31	171.58	.86965	.357	.537	6118
-160.000	299.670	37.525	.02665	151.765	4982.64	140.39	182.33	.90678	.356	.539	5906
-140.000	319.670	36.917	.02709	140.026	4624.27	150.49	193.13	.94165	.357	.541	5699
-120.000	339.670	36.313	.02754	129.405	4294.23	160.63	203.98	.97456	.358	.544	5498
-100.000	359.670	35.712	.02800	119.771	3990.18	170.82	214.89	1.00578	.360	.548	5304
-80.000	379.670	35.112	.02848	111.007	3709.93	181.05	225.88	1.03552	.362	.552	5116
-60.000	399.670	34.515	.02897	103.015	3451.50	191.35	236.96	1.06395	.365	.556	4935
-40.000	419.670	33.918	.02948	95.708	3213.14	201.72	248.13	1.09123	.369	.561	4760
-20.000	439.670	33.323	.03001	89.010	2993.30	212.18	259.41	1.11749	.373	.567	4592
-.000	459.670	32.729	.03055	82.858	2790.66	222.72	270.81	1.14284	.378	.573	4429
20.000	479.670	32.136	.03112	77.197	2604.06	233.45	282.43	1.16758	.388	.585	4264
40.000	499.670	31.543	.03170	71.980	2432.46	244.29	294.19	1.19160	.394	.592	4115
60.000	519.670	30.952	.03231	67.166	2274.94	255.25	306.11	1.21499	.401	.600	3972
80.000	539.670	30.362	.03294	62.719	2130.65	266.35	318.19	1.23781	.409	.609	3834
100.000	559.670	29.775	.03359	58.609	1998.77	277.59	330.46	1.26012	.417	.618	3704
120.000	579.670	29.190	.03426	54.809	1878.55	288.98	342.90	1.28196	.425	.627	3581
140.000	599.670	28.608	.03496	51.295	1769.20	300.62	355.64	1.30519	.448	.650	3447
160.000	619.670	28.030	.03568	48.046	1670.00	312.51	368.66	1.32656	.452	.653	3346
180.000	639.670	27.457	.03642	45.043	1580.23	324.46	381.79	1.34740	.457	.659	3248
200.000	659.670	26.890	.03719	42.267	1499.17	336.50	395.03	1.36779	.464	.666	3155
220.000	679.670	26.330	.03798	39.703	1426.11	348.64	408.42	1.38778	.473	.673	3068
240.000	699.670	25.777	.03879	37.334	1360.38	360.90	421.96	1.40742	.481	.681	2986
260.000	719.670	25.232	.03963	35.147	1301.36	373.28	435.66	1.42672	.490	.689	2910
280.000	739.670	24.697	.04049	33.126	1248.43	385.79	449.53	1.44572	.500	.697	2840
300.000	759.670	24.171	.04137	31.260	1201.04	398.43	463.55	1.46443	.509	.705	2775
320.000	779.670	23.656	.04227	29.536	1158.69	411.20	477.74	1.48287	.519	.714	2715
340.000	799.670	23.152	.04319	27.943	1120.93	424.11	492.09	1.50104	.529	.722	2661
360.000	819.670	22.659	.04413	26.469	1087.33	437.14	506.60	1.51896	.539	.730	2611
380.000	839.670	22.178	.04509	25.106	1057.54	450.30	521.27	1.53665	.549	.737	2565
400.000	859.670	21.709	.04606	23.844	1031.21	463.60	536.10	1.55410	.559	.745	2523
420.000	879.670	21.253	.04705	22.675	1008.07	477.02	551.08	1.57132	.569	.753	2486
440.000	899.670	20.810	.04805	21.591	987.84	490.57	566.21	1.58833	.579	.760	2452
460.000	919.670	20.379	.04907	20.585	970.29	504.25	581.48	1.60512	.588	.767	2421
480.000	939.670	19.961	.05010	19.650	955.19	518.05	596.90	1.62171	.598	.774	2394
500.000	959.670	19.556	.05113	18.781	942.35	531.98	612.46	1.63809	.607	.781	2369
520.000	979.670	19.164	.05218	17.972	931.59	546.02	628.16	1.65428	.617	.788	2348
540.000	999.670	18.784	.05324	17.219	922.72	560.20	643.99	1.67028	.626	.795	2329
560.000	1019.670	18.417	.05430	16.517	915.60	574.49	659.95	1.68608	.635	.801	2312
580.000	1039.670	18.063	.05536	15.861	910.06	588.90	676.04	1.70171	.645	.808	2298
600.000	1059.670	17.720	.05643	15.249	905.97	603.43	692.25	1.71716	.654	.814	2286
640.000	1099.670	17.070	.05858	14.140	901.62	632.85	725.06	1.74754	.671	.826	2267
680.000	1139.670	16.465	.06074	13.165	901.58	662.75	758.34	1.77728	.689	.838	2255
720.000	1179.670	15.901	.06289	12.306	905.02	693.12	792.10	1.80639	.705	.850	2247
760.000	1219.670	15.376	.06504	11.543	911.22	723.97	826.33	1.83493	.722	.862	2244
800.000	1259.670	14.887	.06717	10.865	919.59	755.29	861.02	1.86291	.739	.873	2245

Table 27. Continued.

ETHANE ISOBAR AT P = 9000 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-280.009	179.661	41.352	.02418	254.799	7825.75	79.62	119.92	.63078	.374	.536	7203
-280.000	179.670	41.352	.02418	254.790	7825.55	79.63	119.93	.63081	.374	.536	7203
-260.000	199.670	40.708	.02457	233.830	7335.63	89.70	130.64	.68736	.369	.536	7020
-240.000	219.670	40.076	.02495	214.409	6836.63	99.77	141.35	.73847	.365	.535	6816
-220.000	239.670	39.453	.02535	196.723	6355.80	109.81	152.05	.78509	.361	.535	6602
-200.000	259.670	38.837	.02575	180.736	5903.71	119.84	162.75	.82797	.359	.535	6387
-180.000	279.670	38.228	.02616	166.321	5483.57	129.87	173.46	.86771	.357	.536	6173
-160.000	299.670	37.624	.02658	153.324	5095.29	139.91	184.20	.90480	.357	.538	5963
-140.000	319.670	37.024	.02701	141.587	4737.18	149.97	194.98	.93961	.357	.540	5759
-120.000	339.670	36.428	.02745	130.967	4407.22	160.06	205.81	.97247	.358	.543	5561
-100.000	359.670	35.835	.02791	121.332	4103.10	170.20	216.70	1.00363	.360	.546	5369
-80.000	379.670	35.245	.02837	112.567	3822.68	180.38	227.67	1.03330	.363	.550	5183
-60.000	399.670	34.657	.02885	104.574	3563.99	190.63	238.72	1.06166	.366	.555	5004
-40.000	419.670	34.071	.02935	97.266	3325.27	200.95	249.86	1.08887	.369	.560	4832
-20.000	439.670	33.487	.02986	90.567	3105.00	211.34	261.11	1.11505	.373	.565	4666
-.000	459.670	32.905	.03039	84.415	2901.83	221.82	272.47	1.14031	.378	.571	4506
20.000	479.670	32.324	.03094	78.753	2714.59	232.49	284.04	1.16496	.388	.582	4343
40.000	499.670	31.744	.03150	73.535	2542.24	243.26	295.76	1.18890	.394	.590	4196
60.000	519.670	31.167	.03209	68.718	2383.83	254.16	307.63	1.21219	.401	.598	4055
80.000	539.670	30.591	.03269	64.268	2238.50	265.19	319.67	1.23491	.409	.606	3920
100.000	559.670	30.018	.03331	60.154	2105.45	276.36	331.88	1.25712	.417	.615	3791
120.000	579.670	29.449	.03396	56.348	1983.90	287.67	344.26	1.27886	.426	.624	3670
140.000	599.670	28.882	.03462	52.826	1873.12	299.23	356.94	1.30198	.448	.647	3537
160.000	619.670	28.321	.03531	49.567	1772.37	311.05	369.90	1.32325	.452	.650	3437
180.000	639.670	27.764	.03602	46.551	1680.94	322.93	382.96	1.34399	.458	.656	3340
200.000	659.670	27.213	.03675	43.760	1598.14	334.90	396.14	1.36427	.465	.662	3248
220.000	679.670	26.669	.03750	41.178	1523.27	346.97	409.46	1.38417	.473	.670	3161
240.000	699.670	26.132	.03827	38.789	1455.69	359.16	422.93	1.40370	.481	.678	3080
260.000	719.670	25.603	.03906	36.579	1394.79	371.47	436.56	1.42291	.491	.686	3005
280.000	739.670	25.083	.03987	34.534	1339.96	383.91	450.35	1.44181	.500	.694	2934
300.000	759.670	24.573	.04070	32.642	1290.68	396.49	464.31	1.46043	.510	.702	2869
320.000	779.670	24.072	.04154	30.890	1246.45	409.20	478.43	1.47878	.519	.710	2809
340.000	799.670	23.582	.04241	29.268	1206.80	422.05	492.72	1.49687	.529	.718	2754
360.000	819.670	23.102	.04329	27.766	1171.33	435.03	507.17	1.51472	.539	.726	2703
380.000	839.670	22.633	.04418	26.373	1139.68	448.14	521.78	1.53233	.549	.734	2657
400.000	859.670	22.176	.04509	25.080	1111.51	461.39	536.54	1.54971	.559	.742	2614
420.000	879.670	21.731	.04602	23.880	1086.52	474.78	551.47	1.56687	.569	.750	2575
440.000	899.670	21.297	.04695	22.765	1064.46	488.29	566.54	1.58381	.579	.758	2540
460.000	919.670	20.876	.04790	21.729	1045.09	501.94	581.77	1.60055	.589	.765	2508
480.000	939.670	20.466	.04886	20.764	1028.19	515.71	597.14	1.61709	.598	.772	2480
500.000	959.670	20.068	.04983	19.865	1013.57	529.61	612.66	1.63343	.608	.779	2454
520.000	979.670	19.682	.05081	19.027	1001.05	543.64	628.32	1.64958	.617	.786	2431
540.000	999.670	19.307	.05179	18.244	990.45	557.80	644.12	1.66554	.626	.793	2410
560.000	1019.670	18.945	.05278	17.513	981.63	572.08	660.05	1.68132	.636	.800	2392
580.000	1039.670	18.594	.05378	16.830	974.45	586.49	676.12	1.69693	.645	.807	2376
600.000	1059.670	18.254	.05478	16.190	968.75	601.01	692.31	1.71236	.654	.813	2362
640.000	1099.670	17.607	.05679	15.028	961.37	630.44	725.09	1.74272	.671	.826	2340
680.000	1139.670	17.003	.05881	14.004	958.55	660.35	758.37	1.77245	.689	.838	2324
720.000	1179.670	16.438	.06084	13.098	959.49	690.75	792.14	1.80157	.706	.850	2314
760.000	1219.670	15.910	.06286	12.293	963.50	721.63	826.38	1.83011	.722	.862	2308
800.000	1259.670	15.416	.06487	11.575	969.97	753.00	861.10	1.85812	.738	.874	2306

Table 27. Continued.

ETHANE ISOBAR AT P = 10000 PSI

T DEG F	T DEG R	DEN LB/CUFT	VOL CUFT/LB	DP/DT PSI/R	DP/DD PSICUFT/LB	E BTU/LB	H BTU/LB	S BTU/LB/R	CV BTU/LB/R	CP BTU/LB/R	W FT/S
-278.232	181.438	41.422	.02414	255.624	7959.00	80.01	124.72	.63256	.375	.536	7258
-260.000	199.670	40.843	.02448	236.695	7530.91	89.14	134.48	.68383	.370	.535	7101
-240.000	219.670	40.220	.02486	217.363	7044.59	99.14	145.18	.73489	.366	.535	6905
-220.000	239.670	39.608	.02525	199.731	6571.10	109.11	155.86	.78145	.362	.534	6698
-200.000	259.670	39.004	.02564	183.775	6123.22	119.07	166.55	.82426	.360	.534	6489
-180.000	279.670	38.407	.02604	169.376	5705.49	129.03	177.24	.86393	.358	.535	6281
-160.000	299.670	37.816	.02644	156.386	5318.45	138.98	187.95	.90093	.358	.536	6076
-140.000	319.670	37.230	.02686	144.650	4960.96	148.96	198.70	.93565	.358	.539	5876
-120.000	339.670	36.649	.02729	134.026	4631.06	158.97	209.50	.96840	.360	.541	5682
-100.000	359.670	36.073	.02772	124.385	4326.71	169.02	220.35	.99945	.361	.544	5495
-80.000	379.670	35.499	.02817	115.614	4045.84	179.11	231.27	1.02901	.364	.548	5314
-60.000	399.670	34.929	.02863	107.614	3786.50	189.26	242.27	1.05725	.367	.552	5139
-40.000	419.670	34.362	.02910	100.298	3546.98	199.48	253.36	1.08432	.370	.557	4971
-20.000	439.670	33.798	.02959	93.592	3325.73	209.76	264.55	1.11036	.374	.562	4810
-.000	459.670	33.237	.03009	87.432	3121.41	220.13	275.85	1.13548	.379	.568	4654
20.000	479.670	32.678	.03060	81.763	2932.81	230.68	287.35	1.15998	.389	.579	4495
40.000	499.670	32.122	.03113	76.536	2758.90	241.34	298.99	1.18375	.395	.586	4352
60.000	519.670	31.568	.03168	71.710	2598.67	252.12	310.78	1.20688	.402	.593	4214
80.000	539.670	31.018	.03224	67.249	2451.30	263.03	322.72	1.22944	.410	.601	4082
100.000	559.670	30.471	.03282	63.121	2315.96	274.07	334.84	1.25148	.418	.610	3957
120.000	579.670	29.928	.03341	59.299	2191.89	285.25	347.12	1.27304	.426	.619	3838
140.000	599.670	29.389	.03403	55.758	2078.35	296.69	359.69	1.29599	.449	.641	3708
160.000	619.670	28.855	.03466	52.475	1974.65	308.38	372.55	1.31707	.453	.645	3610
180.000	639.670	28.326	.03530	49.432	1880.08	320.13	385.50	1.33764	.458	.650	3515
200.000	659.670	27.803	.03597	46.610	1794.00	331.96	398.57	1.35775	.465	.657	3424
220.000	679.670	27.287	.03665	43.993	1715.75	343.91	411.77	1.37747	.473	.664	3339
240.000	699.670	26.778	.03734	41.565	1644.71	355.98	425.13	1.39684	.482	.672	3258
260.000	719.670	26.276	.03806	39.312	1580.30	368.17	438.64	1.41589	.491	.680	3183
280.000	739.670	25.783	.03879	37.221	1521.95	380.50	452.32	1.43463	.500	.688	3113
300.000	759.670	25.298	.03953	35.281	1469.15	392.97	466.16	1.45310	.510	.696	3048
320.000	779.670	24.823	.04029	33.479	1421.42	405.57	480.17	1.47130	.520	.705	2987
340.000	799.670	24.356	.04106	31.805	1378.29	418.32	494.35	1.48925	.530	.713	2931
360.000	819.670	23.900	.04184	30.248	1339.39	431.21	508.69	1.50696	.540	.721	2879
380.000	839.670	23.453	.04264	28.800	1304.33	444.24	523.19	1.52445	.550	.729	2831
400.000	859.670	23.017	.04345	27.452	1272.79	457.41	537.86	1.54171	.559	.737	2787
420.000	879.670	22.590	.04427	26.197	1244.48	470.72	552.69	1.55876	.569	.745	2747
440.000	899.670	22.175	.04510	25.026	1219.12	484.17	567.67	1.57560	.579	.753	2710
460.000	919.670	21.769	.04594	23.934	1196.48	497.75	582.81	1.59225	.589	.761	2676
480.000	939.670	21.374	.04678	22.914	1176.35	511.47	598.11	1.60870	.598	.768	2645
500.000	959.670	20.990	.04764	21.960	1158.53	525.33	613.55	1.62496	.608	.776	2617
520.000	979.670	20.616	.04851	21.068	1142.84	539.32	629.14	1.64104	.617	.783	2591
540.000	999.670	20.253	.04938	20.233	1129.13	553.45	644.88	1.65695	.627	.790	2568
560.000	1019.670	19.899	.05025	19.450	1117.24	567.71	660.76	1.67267	.636	.798	2547
580.000	1039.670	19.556	.05113	18.715	1107.04	582.09	676.78	1.68823	.645	.804	2528
600.000	1059.670	19.223	.05202	18.026	1098.41	596.61	692.94	1.70363	.654	.811	2512
640.000	1099.670	18.586	.05380	16.768	1085.36	626.03	725.66	1.73393	.672	.825	2484
680.000	1139.670	17.987	.05560	15.653	1077.24	655.95	758.90	1.76363	.689	.838	2462
720.000	1179.670	17.423	.05740	14.661	1073.31	686.38	792.66	1.79274	.706	.950	2446
760.000	1219.670	16.893	.05920	13.775	1072.88	717.31	826.92	1.82130	.723	.863	2435
800.000	1259.670	16.395	.06099	12.981	1075.40	748.72	861.67	1.84933	.739	.875	2428

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16. ABSTRACT *(A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here.)*

The thermophysical properties of ethane are tabulated at integral temperatures over the entire range of fluid states at temperatures from 90 to 600 K along isobars to 700 bar. A new form of the equation of state is employed for the first time. Thermodynamic functions in the compressed liquid at $T < T_c$ are obtained by use of specific heats $C_v(T)$ along a high-density isochore, and $C_\sigma^c(T)$ for the saturated liquid. Use of these new specific heat data and also of new PVT data provide the first reliable set of thermodynamic functions for compressed liquid ethane at temperatures below its normal boiling point.

17. KEY WORDS *(six to twelve entries; alphabetical order; capitalize only the first letter of the first key word unless a proper name; separated by semicolons)*

Densities; enthalpies; entropies; equation of state; ethane; internal energies; isobars; isochores; isotherms; Joule-Thomson inversion; latent heats of vaporization melting line; orthobaric densities; specific heats; speeds of sound; vapor pressures

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